93-470

No. _____

Supreme Court, U.S.
FILED
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In The

# Supreme Court of the United States

October Term, 1993

MYRON DEAN SANDERS, CAPTAIN, U.S. ARMY,

*Petitioner,*

vs.

UNITED STATES,

*Respondent.*

**Petition For Writ Of Certiorari To The United States Court of Military Appeals**

## PETITION FOR WRIT OF CERTIORARI

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## QUESTIONS PRESENTED

1. Can defense counsel be said to have rendered effective assistance in a case of indecent assault when counsel failed to discover and fully present a defense which would have created serious doubt that the crime ever occurred while, at the same time, explaining the accusing witness's high degree of credibility?

2. Is the uncorroborated testimony of a surgical patient – who, at the time of the alleged offense, was emerging from anesthesia and still potentially under the influence of a variety of drugs whose effect on the mind could involve agitation, euphoria, dreams, or even hallucinations – sufficient to support a conviction, for the crime of indecent assault, of an anesthetist with a previously unblemished record?

## LIST OF PARTIES

There are no parties to this proceeding not revealed by the caption.

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**Petition For Writ Of Certiorari To The United States Court of Military Appeals**

## PETITION FOR WRIT OF CERTIORARI

Petitioner, Captain Myron Dean Sanders, respectfully prays that a writ of certiorari issue to review the judgment and opinion of the United States Court of Military Appeals entered in the above-entitled proceeding on June 24, 1993.

## OPINIONS BELOW

The opinion of the United States Court of Military Appeals is reported at 37 M.J. 116 (CMA 1993). It is

reprinted in the Appendix hereto, p. 1, *infra*. The Memorandum Opinion of the Army Court of Military Review is unpublished, but is reprinted at p. 9 of the Appendix.

## JURISDICTION

On June 24, 1993, the United States Court of Military Appeals entered its opinion affirming the determination of the Army Court of Military Review. No petition for rehearing was sought.

The jurisdiction of this Court to review the judgment of the Court of Military Appeals is invoked under 28 U.S.C. § 1259(3).

## CONSTITUTIONAL PROVISIONS INVOLVED

Two amendments to the U. S. Constitution are involved:

> Amendment 6. – FURTHER GUARANTEES IN CRIMINAL CASES
>
> In all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial, by an impartial jury of the State and district wherein the crime shall have been committed, which district shall have been previously ascertained by law, and to be informed of the nature and cause of the accusations; to be confronted with the witnesses against him; to have compulsory process for obtaining Witnesses in his favor, and to have the Assistance of Counsel for his defense.

Amendment 5. – CRIMINAL PROSECUTIONS; DUE PROCESS OF LAW; EMINENT DOMAIN

No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury, except in cases arising in the land or naval forces, or in the Militia, when in actual service in time of War or public danger; nor shall any person be subject for the same offense to be twice put in jeopardy of life or limb; nor shall be compelled in any Criminal Case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.

## STATEMENT OF THE CASE

Petitioner, Myron Dean Sanders, has been a nurse anesthetist since January 1986. Only a very small percentage of Army nurses are also nurse anesthetists. His nurse anesthetist classification was obtained after receiving his registered nursing license, completing an 18-month course, and passing a national certification examination. As a nurse anesthetist, petitioner's duties at Irwin Army Community Hospital, Fort Riley, Kansas, included providing anesthesia services to patients requiring surgery.

In the course of his duties, Captain Sanders provided the anesthesia services for Marybeth Marks, who underwent emergency surgery at Irwin Army Community Hospital (hereinafter IACH) to have her gallbladder removed on 12 May 1989. Ms. Marks was then 18 years old, the

daughter of Floyd and Patricia Marks, and resided in Junction City, Kansas. She had given birth to a daughter on 15 March 1989; she graduated from high school on 22 May 1989.

Captain Sanders reported to work at IACH at 0630 on 12 May 1989. Ms. Marks' surgery commenced at 2206 the same day. As Captain Sanders attached the monitors to the patient in preparation for her surgery, Major Johnson, the nursing supervisor, informed him that intensive care was full. He asked Captain Sanders if he thought he could recover the patient in the recovery room after the surgery. Captain Sanders agreed he could, as long as no emergencies arose. If one did, someone would have to be summoned so he could respond to the surgery, as the anesthetist on call. Captain Sanders was assured that he would be replaced, if necessary.

During the course of Ms. Marks' surgery, Captain Sanders administered the following agents: curare and Anectine for intubation; Sufenta, a narcotic; sodium pentothal to put her to sleep; Norcuron as a muscle relaxant; Forane for amnesia; and nitrous oxide to keep her asleep. After surgery, in the recovery room, he administered fentanyl for pain and, later, droperidol for nausea. The patient was transferred to recovery at approximately 2330 hours. Once Captain Sanders stabilized the patient, he transferred her to the ward at 0030 hours.

Ms. Marks later testified that her first memory after the surgery was of being in the recovery room with Captain Sanders on her right. She alleged his right hand was under the sheets, between her legs, fondling her vagina. She closed her eyes, opened them, and saw him

on her left side doing the same thing. She fell asleep and awoke to see him talking on the phone, stating, "I have Marybeth Marks here in recovery." When she opened her eyes again, Captain Sanders was allegedly on her right side rubbing her vagina, saying, "How does that feel? Do you like that?" After discharge from the hospital, Ms. Marks reported to her boyfriend and her mother her memory of having been touched inappropriately by Captain Sanders. On 30-31 August and 1 September 1989, he was tried at Fort Riley, Kansas, by general court-martial. Despite his plea of innocence, he was found guilty of indecent assault, a violation of Uniform Code of Military Justice, Art. 134, 10 U.S.C. § 934 (1982). Petitioner was sentenced to dismissal from the service.

Captain Sanders' defense was founded on his excellent service records, reputation for honesty, and good character. It also involved attacking the credibility of the accusing witness based on the fact that she was under the influence of mind-altering drugs at the time of the alleged assault. There was testimony for the defense from two experts who indicated generally that surgical patients can have bizarre dreams as a result of anesthesia and slip in and out of consciousness as they are recovering from anesthesia, resulting in distortions of reality in their recall of events. However, one of these experts (Major Douglass, denominated Lieutenant Colonel in his affidavit) indicated that droperidol, given to Ms. Marks in recovery, was the only one of the drugs given that was associated with hallucinations. The prosecution later pointed out in cross-examination that Ms. Marks recalled being touched sexually by Captain Sanders *prior* to the phone call in which he related that he would administer

droperidol for her nausea. The other defense expert (Lieutenant Colonel Keeler) touched upon various of the drugs as being capable of causing dreams or mental aberrations, and how the alleged victim's mind could superimpose upon the latter hospital experience her prior experiences during the birth of her baby. Nitrous oxide was mentioned in association with dreams, but the witness indicated her expectation that it would not have an effect in the recovery period. She did relate two anecdotes of sexual hallucinations associated with anesthesia, one particularly with nitrous oxide. The prosecution's expert witness, however, testified he knew of no medical journal articles on the hallucinogenic properties of the drugs given Ms. Marks. The defense presented *no* treatises in support of its position, despite the fact that Captain Sanders had given two such articles to his counsel.

Subsequent to his conviction, Captain Sanders learned, through his supervisor, that an oral surgeon at the hospital had come forward with a textbook containing material regarding the association of nitrous oxide with sexual hallucinations. He then conducted a specific literature search and came up with thirteen published articles which contained information on the subject. He hired his appellate counsel, at whose request Lieutenant Colonel Keeler did a literature search and located thirty to forty references wherein nitrous oxide was associated with hallucinations, including a number of articles specifically dealing with sexual hallucinations as a side effect of nitrous oxide. All were published prior to petitioner's court-martial.

Based primarily upon the failure of Sanders' defense counsel to discover and capitalize upon the defense of

nitrous oxide-induced sexual hallucination, Sanders appealed to the Army Court of Military Review, alleging ineffective assistance of counsel.[1] That Court affirmed the conviction by a two-one decision; the dissenting judge, in addition to concluding that the cumulative impact of the various errors of defense counsel had the effect of rendering their assistance ineffective, also suggested that the evidence was factually insufficient to support the conviction. App. 9, 12. Both issues were briefed to the Court of Military Appeals, which affirmed the lower Court decision, at 37 M.J. 116 (CMA 1993). App. 1.

## REASONS FOR GRANTING THE WRIT

### I. AFFIRMANCE OF THE LOWER COURT'S DECISION WOULD PLACE THIS COURT'S STAMP OF APPROVAL ON A CRIMINAL DEFENSE THAT SIMPLY CANNOT BE CHARACTERIZED AS "EFFECTIVE."

The Sixth Amendment to the United States Constitution grants to an accused the right to the "Assistance of Counsel for his defense." U.S. Const., Amend. 6. In 1984, this Court laid out the proper standard for measuring the performance of attorneys in their defense of an accused in *Strickland v. Washington*, 466 U.S. 668, 104 S.Ct. 2052, 80

[1] The dissenting opinion of Judge Johnston, of the Army Court of Military Review, sets out other aspects of the allegation of ineffective assistance which appeared in petitioner's brief to that Court. App. 14-15.

L. Ed. 2d 674 (1984). The majority in Strickland considered the role of the defense attorney in the following manner:

> The Sixth Amendment recognizes the right to the assistance of counsel because it envisions counsel's playing a role that is critical to the ability of the adversarial system to produce just results. An accused is entitled to be assisted by an attorney . . . who plays the role necessary to ensure that the trial is fair.

*Id.*, at 685. In 1970, this Court had recognized that an accused is entitled to the "effective" assistance of counsel. *McMann v. Richardson*, 397 U.S. 759, 90 S.Ct. 1441, 25 L. Ed. 2d 763, cited in *Strickland*, 466 U.S., at 686. In determining whether the accused received such ineffective assistance of counsel that his conviction must be overturned, the Strickland Court held that two elements must be demonstrated by the accused in order to succeed on such an appeal: (1) that counsel's performance was deficient, and (2) that the deficient performance prejudiced his defense. 466 U.S. at 687.

A defense counsel owes to his client certain duties in providing reasonably effective counsel. These duties include adequate preparation, *United States v. Scott*, 24 M.J. 186, 192 (C.M.A. 1987); reasonable investigation, *Strickland*, 466 U.S. at 691; *Scott*, 24 M.J. at 192; *United States v. Herd*, 29 M.J. 702, 704 (A.C.M.R. 1989); *Wade v. Armontrout*, 798 F.2d 304, 307 (8th Cir. 1986); and zealous advocacy, ABA Standards, The Defense Function, Standard 4-4.1 (2d Ed. 1979). Captain Sanders' defense counsel breached each of these duties, rendering their performance incompetent and ineffective.

The prosecuting witness, Marybeth Marks, reported the alleged incident of sexual assault to the C.I.D. on 17 May 1989. On 30 June 1989 Major Brian Nockleby was detailed to defend Captain Sanders against the charges. Captain Dan Rottinghaus was to serve as the assistant defense counsel. After the Article 32 investigation, Captain Sanders hired a civilian attorney, Mr. Bruce Barry, of Junction City, Kansas, to further assist in his defense. After his initial meeting with Mr. Barry, Captain Sanders prepared a list of potential character and expert witnesses, as well as a compilation of the agents he administered to Ms. Marks, and gave it to Mr. Barry on 10 July 1989. In addition, Captain Sanders provided the name of John R. Lyons, his wife's employer, to Mr. Barry shortly after hiring him. Mr. Lyons, upon hearing about the charges brought against Captain Sanders, had related to Irene Sanders that he had suffered an embarrassing episode while under nitrous oxide sedation in a dentists's office. Sanders Affidavit, App. 21; Lyons Affidavit, App. 66.

Captain Sanders' defense counsel relied on him to conduct, singlehandedly, research on the possible hallucinatory side effects of the drugs administered to Ms. Marks. Mr. Barry assured Captain Sanders, however, that he, too, was researching the area. Captain Sanders sought information at the IACH Library on the side effects of the narcotic agents he gave to Ms. Marks postsurgically, including the drugs fentanyl and droperidol. He found one article relating to hallucinations and dreams with anesthesia, and an article on the side affects of fentanyl. Sanders Affidavit, App. 21-22. The former article illustrates by tables hallucinations and dreams experienced by

patients sedated with 50 to 70 percent nitrous oxide, along with other anesthetic agents. Wilson, Vaughan, and Stephen, "Awareness, Dreams, and Hallucinations Associated With General Anesthesia", *Anesthesia and Analgesia*, 54 (Sept.-Oct. 1975), 609-617. One of the final paragraphs states:

> One overriding factor that plays a part in this area of interest, and which cannot be answered by our study, is the part that $N_20$ may play in causing the patient to remember dreams. Certainly this drug, which has become an almost universal adjunct to anesthesia, has historically (when used by itself) been productive of vivid hallucinations and dreams in some individuals.

*Id.*, at 616; App. 147.

Once Captain Sanders supplied these materials to defense counsel, they apparently declined any further exploration for exculpatory articles from medical journals. They failed to ask either Major Douglass or Lieutenant Colonel Keeler to conduct a literature search regarding the anesthetic agents used, and their association with hallucinations, delusions, dreams, etc., even though both were experts in the field of anesthesia. Keeler Affidavit, App. 49; Douglass Affidavit, App. 62. They apparently ignored the significance of Dr. Lyons' report and relied solely on their assumption that the investigation performed by their client was thorough enough, despite the fact that Ms. Marks was administered a gaseous mixture of approximately 70 percent nitrous oxide for 90 minutes during her operation, and was on

nitrous oxide alone during the last part of the procedure. Sanders Affidavit, App. 28.

However, it would have been practically impossible for either expert to conduct meaningful research, because defense counsel did not discuss with them their testimony until shortly before they appeared at the court-martial. Defense counsel admitted, on the record at a pretrial meeting, that they had contacted Major Douglass on 29 August 1989, regarding his testimony. R. 27. Major Douglass packed his bags and headed for Kansas "with little knowledge concerning the specifics of the case, and no time for formal preparation." Douglass Affidavit, App. 63. Counsel had been provided with Major Douglass's name and address on 10 July 1989, by Captain Sanders.[2] Lieutenant Colonel Keeler (who has a doctoral degree in pharmacology) was contacted by defense counsel during the week prior to trial and received crucial background information, including medical records, while she was on temporary duty. She had two working days after returning from TDY in which to prepare for Captain Sanders' court-martial. Keeler Affidavit, App. 50.[3]

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[2] Defense counsel blame the late notice to Douglass on their client, stating that he gave them an incorrect phone number for Douglass. Nockleby Affidavit, App. 82. Captain Sanders responds that he did not get an inquiry about the phone number until the day before trial. Sanders Affidavit II, App. 47.

[3] This is disputed by defense counsel in their affidavits, App. 77, 83. However, even giving defense counsel all benefit of the doubt, it is clear that Keeler was not asked to do a full literature search regarding these drugs and further that counsel left it to her to decide what, if any, research to do. Defense

Failure to adequately utilize the experts resulted in the court-martial members not hearing a coherent defense based on nitrous oxide-induced sexual hallucination as an explanation for Marybeth Marks' sincere testimony. There was abundant medical literature available which establishes that nitrous oxide causes sexual hallucinations or fantasies like that which petitioner believes was experienced by Ms. Marks.

Marybeth Marks was given approximately 70 percent nitrous oxide throughout her surgical procedure by Captain Sanders, plus other agents as recited above. R., 182-3; Sanders Affidavit, App. 20-21; R. Vol. IV, Prosecution Exhibit 1, p. 45. Captain Sanders has indicated that the Forane, Sufenta, and Norcuron were probably eliminated from Ms. Marks' body by the time she arrived in the recovery room. Because he knew he was expected to recover the patient himself, he titrated these agents so their effects would wear off quickly after surgery, i.e., during the last 30-40 minutes of the surgery, the stronger inhalation agent was turned off. He administered nitrous oxide only, after that point, so the patient would awake soon after surgery, he could transfer her to the ward, and go home for the night. Sanders Affidavit, App. 27-28. Nitrous oxide remained in the body of Marybeth Marks for at least 10 minutes post-surgically, and probably much

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counsel Nockleby further states that Major Douglass was not asked to do research on nitrous oxide because that was viewed as fruitless when Captain Sanders failed to come up with anything. App. 82. Had Keeler been told in advance of Dr. Lyons' experience and furnished the article by Wilson, Vaughan and Stephen, she might readily have perceived the need for further research on nitrous oxide, even without a request by counsel.

longer, due to a longer surgical procedure, a higher concentration of nitrous oxide, and the fact that the fentanyl given to the patient by Captain Sanders immediately upon her transfer to the recovery room is a "respiratory depressant and likely slowed the elimination of the nitrous oxide from her body even more." *Id.*, at 27. Articles from the medical journals found by Captain Sanders and Lieutenant Colonel Keeler further support the idea of nitrous oxide retention. See Sanders, List of Articles, Post-trial, App. 40 and Keeler Affidavit, App. 52.[4]

Moreover, nitrous oxide is known and documented to cause hallucinogenic side effects, some in the form of sexual illusions or fantasies. Jastak and Malamed, in "Nitrous Oxide Sedation and Sexual Phenomena," *Journal of the American Dental Association*, 101 (1980) 38-40[5] record nine cases wherein patients received more than 50 percent nitrous oxide in which the patients experienced sexual phenomena. Eight of the nine cases involved tactile sensations; one in particular involved a fantasy wherein a dentist attempted to fondle the patient's breast or pelvic area. Only one of the nine cases resulted in a criminal trial. The dentist was acquitted. App. 91. This article was

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[4] Not all the articles referred to in the Sanders and Keeler affidavits submitted to the Army Court of Military review are included in the Appendix hereto; however, a complete listing of references is found at App. 70.

[5] This same article appears also at *Dental Anesthesia Sedation*, 13 (1984) 70-73, and much of the information therein appears in Malamed, Stanley F., *Sedation: A Guide to Patient Management*, C. V. Mosby, 1985, pp. 254-257. References by Keeler to this Article are to the 1984 printing.

located after the trial by both Captain Sanders and Lieutenant Colonel Keeler. Lieutenant Colonel Keeler testifies "[n]ow, having had the opportunity to peruse the published medical reports on this topic, . . . I strongly suggest that nitrous oxide was the source of Ms. Marks' sexual hallucinations." Keeler Affidavit, App. 51. Her research revealed the following:

> . . . . The incidence of post-operative unpleasant dreams or hallucinations associated with general anesthesia has been reported to be from 1.9-19 percent, depending upon the type of surgery, drug combinations used, and type of subjects studied. *See* Aboulesh and Taylor, 1976, Attachment 2; Wilson, *et al.*, 1969, Attachment 20; Kobielski, *et al.*, 1985, Attachment 13; Jastak and Marshall, 1984, Attachment 12; and Tucker, *et al.*, 1984, Attachment 19. Hallucination is an established side effect of nitrous oxide in the course of anesthesia or sedation. *See* Davidson and Kahn, 1985, Attachment 6; Brodsky and Zuniga, 1975, Attachment 5. Nitrous oxide was first synthesized in 1776, and since that time, has been abused for its psychedelic effects. *See* Hamburg, 1980, Attachment 8; Duncan and Moore, 1984, Attachment 7. It was estimated that up to 20 percent of dental and medical students in the United States used nitrous oxide "socially." *See* Rosenberg, *et al.*, 1979, Attachment 16.

*Id.*, at 51-52. She goes on to state:

> . . . . A dose-response relationship between nitrous oxide concentrations (40-80 percent) and the occurrence of dreams was identified in normal volunteers. The concentration of nitrous oxide Ms. Marks received provoked dreams in

> 19-25 percent of the subjects studied. *See* Rosenberg, 1974, Attachment 17. Indeed, specific recommendations have been made to dentists to keep nitrous oxide concentrations below 50 percent in order to avoid untoward psychic reactions. *See* Jastak and Malamed, 1984, Attachment 11.

*Id.*, 52-53. She states further:

> A survey of 50 female dental hygiene students administered nitrous oxide revealed that 18 percent expressed a feeling of sexual arousal or increased sexuality. *See* Jastak and Malamed, 1984, Attachment 11. Additional published anecdotes substantiate such occurrences: " . . . young, attractive female patient reported that breathing a 50 percent nitrous oxide-oxygen mixture was just like having sex!" *See* Jastak and Malamed, 1980, Attachment 10. Other case reports simply alluded to the sexual content of anesthesia-related dreams or hallucinations. *See* Kobielski, *et al.*, 1985 Attachment 13; and Jastak and Malamed, 1984, Attachment 11. . . .

*Id.*, 54. The search of medical literature conducted by Captain Sanders after his conviction produced the same conclusions. Within his affidavit, he refers to 13 articles discussing the incidence of nitrous oxide-induced fantasies. Sanders Affidavit, App. 25-30.

In addition to these scholarly reports of sexual phenomena following nitrous oxide sedation, the account of Dr. John R. Lyons personalizes this subject matter vividly as he describes being given nitrous oxide in the office of a dentist in Ohio:

> . . . . After several minutes of breathing the anesthetic with the technician seated beside me, speaking in a friendly manner, I started to believe that she was making sexual advances toward me. I was very nervous and *I felt the sensation of her touching the inside of my upper left thigh.* All the while she was talking, I was certain that she was trying to stimulate me sexually, and I was very mentally excited.

Lyons Affidavit, App. 67, emphasis supplied. He notes that the dentist was working on a second patient only a few feet away from him, and that he later realized no advances were ever made. The dentist is a friend of his and "would have been aware of any improprieties and would not have tolerated any of the actions that I was convinced had happened." *Id.*

Many of the articles found and referred to by Sanders and Keeler come from dental literature. Dr. Lyons' experience occurred in a dentist's office. Captain Sanders explains why more of the cases reported occurred in dentists' offices:

> In a dentist's office, a patient is usually administered nitrous oxide, or laughing gas, by itself, in combination with no other drugs. Incidents of nitrous oxide-induced sexual fantasies are more often reported after a dental procedure. In a medical setting, nitrous oxide is usually combined with other intravenous drugs to provide adequate anesthesia. By itself, nitrous oxide does not provide enough "depth" of anesthesia for a surgical procedure. Because of the presence of other drugs with nitrous oxide, there are fewer hallucinations in the medical field.

Sanders Affidavit, App. 27-28.

However, *as indicated earlier, Captain Sanders turned off the anesthetic agents except nitrous oxide during the last 30-40 minutes of the gallbladder surgery so Ms. Marks would awaken more quickly after her arrival in the recovery room.* Thus, with nitrous oxide the only remaining agent in her system, we believe Marybeth Marks experienced a tactile hallucination much like that described in the medical literature and by Dr. John Lyons.

Another important factor in the occurrence of nitrous oxide-induced hallucinations is the emotional stability or instability of the patient. According to Lieutenant Colonel Keeler,

> Various psychologic factors seem to influence individual susceptibility, but in general, less emotionally stable individuals or individuals under stress tend to be more affected by exposure to gases that produce narcosis and cause hallucinations. See Duncan and Moore, 1984, Attachment 7; Hills and Ray, 1977, Attachment 9; Jastak and Malamed, 1980, Attachment 10; and Steinberg, 1956, Attachment 18. It has been recognized that certain patients' personality types can be expected to sexualize the relationship with the medical care provider. *See* Lambert, 1982, Attachment 14. One dentist concedes that teenage females under nitrous oxide have a propensity to have sexual aberrations. *See* Allen, 1979, Attachment 3. Further, individuals who repress sexual yearning will have greater propensity to release sexual fantasies under the effects of a disinhibiting drug. *See* Brahams, 1990, Attachment 4. Because of the incidence of sexually oriented hallucinations, it has been recommended to male dentists that they have a chaperone in the room when a young woman is

> administered nitrous oxide. *See* Jastak and Malamed, 1984, Attachment 11; and Lambert, 1982, Attachment 14.

Keeler Affidavit, App. 53. Marybeth Marks had, two months prior to her gallbladder surgery, given birth to a baby out of wedlock, an occurrence that would likely have affected her emotional stability or level of stress. She was also approaching high school graduation. Had defense counsel discovered the known facts about nitrous oxide, they could have capitalized upon Ms. Marks' probable susceptibility to it.

The names of Lieutenant Colonel Keeler and Major Douglass were given by Captain Sanders to his counsel in part because they were in a better position than he was to perform this research, one being in a research position, and the other in a teaching position. Sanders Affidavit II, App. 46. The defense team entirely failed to take advantage of that aspect of these individuals' expertise. The result of this failure to properly utilize the available experts was a defense which fell far wide of the mark.

Essentially none of the information related above about nitrous oxide was introduced at trial, other than that it could produce sexual hallucinations, and was generally used alone by dentists. Mr. Bruce Barry, in his opening statement, declared "our defense, if you will, is a good officer defense, a good nurse defense. . . . " R. 167. The panel was simply asked to believe that since Captain Sanders was a good soldier, he did not commit indecent assault. Many of the witnesses spent much of their time on the stand either edifying or attacking Captain Sanders' decisions regarding the post operative care of Ms. Marks. For the most part, the testimony on the role of the drugs

on Ms. Marks' perceptions was hidden amidst the defense attempts to paint Captain Sanders as a good nurse and the prosecution's rebuttal of this defense. No scientific treatises or articles were referred to, nor admitted into evidence.[6] Further, testimony on these matters was presented in a disorganized, disjointed fashion. Lieutenant Colonel Troop testified droperidol could cause hallucinations. R. 399. One patient saw "wild Arabian naked men" while recovering from anesthesia, according to Major Douglass. He also testified to patients having sexual fantasies and erections during anesthesia. R. 488. However, the only drug used that he felt was capable of causing hallucinations was droperidol, R. 503, and the chance of a patient experiencing such phenomenon was slight. R. 507. Lieutenant Colonel Keeler testified briefly about two dental patients who had experienced sexual dreams or fantasies while under nitrous oxide sedation, one of whom was Dr. Lyons, and the other a woman who had the same fantasy after other procedures also. (Keeler's entire testimony on nitrous oxide is included herein, App. 152.) However, Dr. Lyons, who was available to testify, was not called.

The evidence which was presented regarding side effects of the agents administered to Ms. Marks had mainly to do with droperidol. A close examination of the medical records and testimony by Ms. Marks demonstrates, however, that her sensation of being molested

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[6] This was a critical error, because the prosecution's rebuttal expert witness, Dr. Guerra, testified he knew of *no* medical journal articles regarding hallucinogenic side effects of the drugs given Ms. Marks. R. 640.

occurred shortly after her arrival in the recovery room. R. 115-117, 207-209 and R. Vol. IV, Prosecution Exhibit 1, p. 24. Captain Sanders administered droperidol at a point much later. R. 232; Sanders Affidavit, App. 21. Thus, it appears that droperidol could not have been the agent causing Ms. Marks' perception. This fact was eloquently pointed out to the court-martial panel by the prosecutor, Captain Bourne, in his closing statement. R. 736. What better evidence could there be of the lack of proper preparation of the witnesses? Surely, had counsel spent enough time with Major Douglass, reviewing his testimony and the anesthesia record, they would not have elicited this testimony that so effectively neutralized the witness.

This Court, in *Strickland v. Washington*, wrote:

> It is all too tempting for a defendant to second-guess counsel's assistance after conviction. . . . A fair assessment of attorney performance requires that every effort be made to eliminate the distorting effects of hindsight, to reconstruct the circumstances of counsel's challenged conduct, and to evaluate the conduct from counsel's perspective at the time.

466 U.S. at 689. Defense counsel, early in the case, knew they had a medical professional with a spotless record accused of sexually molesting a young female patient, with no eyewitness or physical evidence available to corroborate the alleged victim, who was emerging from general anesthesia at the time of the alleged incident. Pure common sense would dictate a defense directed at attacking the witness's account based on the potential effect of

the drugs on her ability to distinguish reality from fantasy, and this the defense counsel attempted to do. However, the generalized testimony regarding dreams and fantasies did not give the panel a good way to rationalize Captain Sanders' denial with Ms. Marks' unassailably correct account of certain details of the room and of Captain Sanders' phone call. Had counsel followed up on nitrous oxide through the experts (or requested full research on all the drugs and come upon the nitrous oxide information in that fashion), they would have recognized that the evidence of full-blown tactile and/or auditory hallucinations of a sexual nature brought about by nitrous oxide would explain her sincere conviction that she had been molested, as well as the mechanism whereby she could mix truth and fantasy in her recollection. The evidence available could have carved a hole the size of the proverbial "Mack truck" in Ms. Marks' credibility, but defense counsel failed to find that evidence – because they failed to ask the experts to *look* for it.

Petitioner does not attempt to argue that his defense counsel did everything wrong and nothing right in his behalf. However, as the Court noted in *United States v. Gaillard*, 49 CMR 471, 475 (A.C.M.R. 1974),

> [A]n incompetent attorney may exert superhuman effort on behalf of his accused, but if he does not recognize legal issues, *present available defenses*, or is otherwise unaware of possible legal objections . . . his efforts seldom will rise to the requisite level of effectiveness required by law.

(Emphasis added.)

Petitioner is joined in his view by Judge Johnston, of the Army Court of Military Review, who agreed in his dissent with Captain Sanders' claim that defense counsel were ineffective in their handling of the drug-induced hallucination defense, preparation of experts, and medical research, as developed herein. Judge Johnston also agreed that several points briefed below, when added to the poor performance regarding nitrous oxide and the experts, had the cumulative effect of rendering counsel ineffective: failure to follow up on an objection to inadmissible testimony by Ms. Marks' mother; failure to object to inadmissible testimony by the CID agent; and failure to object to post traumatic stress disorder testimony presented in rebuttal to the defense case. App. 14-15.

The opinion below dismisses petitioner's claim of ineffective assistance of counsel as "mere Monday-morning quarterbacking, App. 5; though admitting that the alleged failure of counsel to investigate and advocate the role of nitrous oxide deserves attention, the Court then discards the issue for the reason that "its side effects are usually observed when it is used alone"! App. 8. The fact that Captain Sanders had turned off the other agents well prior to the end of surgery was emphasized in petitioner's brief below and is substantiated in the record, so this conclusion on the part of the Court is inexplicable. The Court below further engaged in a commentary suggesting that had the information now adduced been of such a nature as to suggest that a miscarriage of justice had occurred, the best procedure would have been to petition for a new trial on the basis of newly-discovered evidence, for which the two-year statutory deadline has

passed. The Court, however, indicates its agreement "with counsel's implicit recognition that the probable success of such a petition was low." *Id.*

This Court will recognize that on petition for a new trial based on newly-discovered evidence, the convicted defendant must establish that his new evidence was *not* available at the time of the earlier proceeding by the exercise of due diligence; this general rule applies in the military system, *see United States v. Christensen*, 17 M.J. 1072 (A.F.C.M.R. 1984). It is precisely petitioner's point herein that this information *was* available by the exercise of due diligence prior to his court-martial. Therefore, the chance of success of a motion for new trial was reckoned as zero.

Defense counsel attempt to justify their conduct of petitioner's defense but much of the content of their affidavits is disputed by petitioner. Sanders Affidavit II, App. 44-47. Moreover, the affidavits of defense counsel are conclusory and self-serving, and in some instances, nonsensical. For example, the failure to call Dr. Lyons is dismissed as a tactical decision made to avoid the appearance of "grasping for straws." Barry Affidavit, App. 78. How could it be grasping at straws to put on live testimony of Dr. Lyons when counsel apparently had no intention of using documentary evidence and had no other way to bolster the credibility of its experts, whose testimony lacked documentary support?[7] Even more

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[7] This is an example of "strategic choice made after less-than-adequate investigation which therefore is not supported by informed professional judgment." See *Burger v. Kemp*, 483 U.S. 776, 107 S.Ct. 3114, 3136, 97 L. Ed. 2d 638 (1987), dissent by Blackmun, J.

telling is Mr. Barry's conclusion (App. 79) that the court members found Ms. Marks' testimony credible and believable. This is exactly what a direct and specific defense, targeting nitrous oxide as the cause of a tactile and auditory sexual hallucination, could have avoided, especially in concert with the evidence of certain factors that might predispose Ms. Marks to have such a hallucination.

Mr. Barry's affidavit indicates that he didn't expect to lose the case (*Id.*), and unfortunately, that attitude may be just exactly what caused the loss. A criminal defense attorney, although recognizing that the law only requires reasonable doubt to get an acquittal, knows that as a practical matter, he must seek, if possible, to prove his client's innocence, or at least to establish the *maximum* quantum of doubt, because he cannot know for sure what the fact finder will consider "reasonable" doubt. If a flyswatter is his only weapon, so be it; but if there is a hammer available, he is duty-bound to use it, and further, is obligated to exercise due diligence to *find* a hammer. Defense counsel herein, unfortunately, assumed entirely too easily that the hammer didn't exist and ceased to look; they were content to use the flyswatter approach in presenting a generalized smattering of evidence regarding the effects of the drugs on Ms. Marks.

Assuming that ineffective assistance of counsel is established,

> The defendant must show that there is a reasonable probability that, but for counsel's unprofessional errors, the result of the proceeding would have been different. . . . [T]he question is whether there is a reasonable probability

> that, absent the errors, the factfinder would have had a reasonable doubt regarding guilt.

*Strickland*, 466 U.S., at 694-695. The *Scott* case enunciates the same standard for court-martial. 24 M.J. at 189. Captain Sanders not only received incompetent assistance of counsel, but also was prejudiced by their inadequacies. Had defense counsel presented to the court-martial panel substantial available evidence regarding the documented tendency of nitrous oxide, administered as it was here, to cause exactly the kinds of perceptions that Ms. Marks experienced, *how* could a rational finder of fact have determined guilt beyond a reasonable doubt? The answer is, they could not.

## II. AFFIRMANCE OF THE LOWER COURT DECISION WOULD COUNTENANCE A CONVICTION BASED ON THE UNCORROBORATED TESTIMONY OF A WITNESS WHO WAS UNDER THE INFLUENCE OF MIND-ALTERING DRUGS AT THE TIME OF THE ALLEGED OCCURRENCE.

In reviewing the sufficiency of the evidence in appellant's case, this Court must determine whether, after viewing the evidence in the light most favorable to the prosecution, "any rational trier of fact could have found the essential elements of the crime beyond a reasonable doubt." See *Jackson v. Virginia*, 443 U.S. 307, 318, 99 S.Ct. 2781, 2788, 61 L. Ed. 2d 560 (1979), reh. den., 444 U.S. 890 (1979).

Here, the government's case rests on the uncorroborated testimony of a victim who was under the influence

of powerful narcotics at the time of the events in question. Even disregarding appellant's outstanding service record, reputation for truthfulness and consistent and credible denial, there was an array of testimony opposing the victim's account. There was expert testimony linking at least one of the drugs given to the victim with sexual hallucinations indistinguishable from the type of recollection reported by the victim. R. 399, 503, 546, 594. Major Barbara Jeleske testified as an expert that it would be "very unusual" and "inconsistent" for the victim to have partial sensations with her lower body at the same time feeling "dead" and "heavy." R. 301, 303. Moreover Lieutenant Colonel Keeler testified that drugs exist such as diazepam (Valium) and midazolam (Versed), which will prevent a patient from having any memory of anything at all, R. 577-578, and that appellant would cover his tracks if he chose to molest a patient. R. 578.[8]

In a case involving a military psychologist convicted of sexual misconduct involving a child under 16 years of age, where the only evidence was the child's uncorroborated statement, the Army Court of Military review, Badami, J., wrote:

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[8] Although trial counsel's objection to Lieutenant Colonel Keeler's testimony as to appellant's covering his tracks was sustained, R. 578, her testimony remains regarding Versed, including her opinion that this drug is supposed to be better than Valium as an amnesiac, and is absolutely better as an amnesiac than the drugs used on Marybeth Marks. R. 578, 583-4. Lieutenant Colonel Keeler could not testify of her direct knowledge on what was available at IACH, but Lieutenant Colonel Troop (petitioner's supervisor) had earlier testified that Versed was used regularly in their practice, R. 373. Thus, this drug clearly was available.

> While corroboration is not an absolute requirement, it is a factor to be examined. The federal courts have recognized that the presence or absence of corroborating evidence may be a critical factor [footnote omitted]. See *United States v. Hinkson*, 632 F.2d 382 (4th Cir. 1980); *United States v. Bailey*, 581 F.2d 341 (3d Cir. 1978); *United States v. Ward*, 552 F.2d 1080 (5th Cir. 1977); *United States v. Carlson*, 547 F.2d 1346 (8th Cir. 1976) [footnote omitted]. Here there is a paucity of physical or testimonial evidence showing that the statements represented the truth.

*United States v. King*, 16 M.J. 990, 993 (A.C.M.R. 1983). The Court set aside three of the charges and their specifications specifically because the complaining witness's statements were the only evidence supporting the allegations involving her. *Id.*, at 994.

Here, only the uncorroborated testimony of the victim is set against an array of evidence, including that regarding the influence of drugs on the victim's ability to perceive and recall events, the fact that some of the drugs administered to the victim may cause hallucinations, and a clear indication that, if appellant had actually committed the offense charge, he had the means by which to prevent the alleged victim from recalling the incident.

In order to believe the victim's account, the court-martial had to disregard the evidence that the offense never actually took place, that the witness's testimony, no matter how affecting or sincere, might be based upon a fantasy. How could they accurately assess her credibility when some of the indicia of that credibility, such as sincerity and consistency, could be the product of a hallucination?

Petitioner contends that no reasonable trier of fact could have concluded that the uncorroborated testimony of a witness in a situation such as that of this victim was sufficient to establish his guilt beyond a reasonable doubt. In light of the credible (if somewhat disorganized) expert testimony regarding the likelihood that the anesthetic drugs had caused some sort of hallucination or other distortion of reality, to which the witness's recent prior hospitalization had contributed, the fact finders' conclusion as to Ms. Marks' credibility cannot be rationally supported. The panel members apparently allowed their personal response to Ms. Marks and her evident unshakeable belief that she had been molested, to outweigh the evidence that the anesthesia could cause her to have this unshakeable belief in something which did not, in fact, occur. Given that there was *no* independent evidence that the act did occur, this situation was at best a "draw," that is, petitioner was no less entitled to belief than Ms. Marks, and that does not constitute proof beyond a reasonable doubt.

## CONCLUSION

Petitioner stands convicted of indecent assault based, he believes, on insufficient evidence, following a trial which did not, due to the failures of his counsel, adequately serve its function as an adversarial testing process. He has lost his good name and his Army career. If this conviction is affirmed, he will almost surely lose his nursing license and his nurse anesthetist certification. A

miscarriage of justice has occurred and the writ of certiorari should be granted to correct it.

Respectfully submitted,

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App. 1

UNITED STATES, Appellee

v.

Myron D. SANDERS, Captain
U.S. Army, Appellant

No. 67,411
CMR No. 8902717

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United States Court of Military Appeals

Argued November 2, 1992

Decided JUN 24 1993

Counsel

For Appellant: Pedro L. Irigonegaray (argued; Elizabeth R. Herbert and Captain Michael Huber (on brief).

For Appellee: Captain Steven M. Walters (argued); Colonel Dayton M. Cramer, Lieutenant Colonel Daniel J. Dell'Orto, Major Kenneth T. Grant (on brief); Colonel Alfred F. Arquilla, Captain Timothy W. Lucas, Captain Jonathan F. Potter.

Military Judge: Richard D. Russell

Opinion of the Court

COX, Judge:

Appellant, a nurse-anesthetist, was convicted, contrary to his pleas, of molesting a semi-conscious, post-operative patient.1/ The granted issues question the legal sufficiency of the evidence of appellant's guilt and the adequacy of trial defense counsel's representation.2/ We

decide both granted issues against appellant, and we affirm.

## Legal Sufficiency

M, the victim, was the 18-year-old daughter of an Army first sergeant. She had undergone a late-night emergency gall bladder operation at Irwin Army Hospital, Fort Riley, Kansas. According to her testimony, she became aware in the recovery room, while intermittently conscious, that appellant was molesting her on two distinct occasions. She was able to describe the room; appellant's words, appearance, and manner of attire; and her own circumstances with great accuracy. Appellant vehemently denied ever touching M inappropriately. He was the only other occupant in the recovery room during most of M's recovery, and much of this time, he was the only other person on duty on that entire floor of the hospital.3/

The defense case went beyond a mere denial of the misconduct and encompassed an extensive review of the various drugs and medications given M before, during, and after surgery, and evidence on the effect these drugs might have on a patient's perception and recollection. Specifically, emphasis was placed on the sort of dreams, illusions, and hallucinations sometimes experienced by persons undergoing such medications. Numerous highly qualified experts testified on behalf of the defense – and for the prosecution in rebuttal. The defense also, through expert witnesses, raised the possibility that M, who had recently given birth, may have been superimposing images and memories of that experience onto her gall

bladder recovery (*i.e.*, medical personnel checking the dilation of her cervix).

On paper, this would appear to have been a very difficult case for the prosecution to prevail in since, in large part, it boiled down to M's testimony against appellant's; and M was admittedly in and out of consciousness during the recovery process. Though the defense took great pains to point out this prosecution obstacle, the factfinder was nevertheless satisfied, beyond a reasonable doubt, of appellant's guilt.

With regard to judging the credibility of witnesses, we well recognize the advantage of the factfinder. Indeed, this Court has no charter whatsoever to assess witness credibility. Art. 67(c), Uniform Code of Military Justice, 10 USC § 867(c) (1989). We may observe, however, that, in addition to presenting its own evidence, the prosecution launched into an intense cross-examination of appellant and the other defense witnesses. In the process, the prosecution developed a number of potential inconsistencies and ambiguities involving appellant's conduct and record-keeping at the time of the alleged offense.4/What impressions, inferences, and conclusions the factfinders actually drew from this cross-examination cannot be gleaned from the record.

In determining whether evidence is sufficient to sustain a conviction as a matter of law, it is not our task to reweigh the evidence afresh, but to ascertain whether there was "some legal and competent evidence," *United States v. Harper*, 22 MJ 157, 161 (CMA 1986), from which "any rational trier of fact could have found the essential

elements of the crime beyond a reasonable doubt," *Jackson v. Virginia*, 443 U.S. 307, 319 (1979). In the instant case, M's testimony alone supplied that quantum of evidence. The factfinder was not obliged to, and obviously did not, credit appellant's protestations of innocence. Further, the experts' testimony regarding the various properties and possible effects of the drugs and medications was not dispositive, *see United States v. Murphy*, 23 MJ 310, 312 (CMA 1987), and was, in any event, far from uniformly supportive of appellant's position. We hold that the evidence of appellant's guilt on this record was *legally* sufficient to sustain his conviction.

## Competence of Counsel

In *United States v. Scott*, 24 MJ 186 (CMA 1987), we followed the standard of the Supreme Court of the United States for assessing competence of counsel as articulated in *Strickland v. Washington*, 466 U.S. 668 (1984). As we noted in *Scott*:

> In order to prevail on an ineffectiveness of counsel claim, an accused must establish both incompetence and prejudice, as follows:
>
> > First, the defendant must show that counsel's performance was deficient. This requires showing that counsel made errors so serious that counsel was not functioning as the "counsel" guaranteed the defendant by the Sixth Amendment. Second, the defendant must show that the deficient performance prejudiced the defense. This requires showing that counsel's errors were so serious as to deprive the defendant of a fair trial, a trial whose result is reliable.

24 MJ at 188, *quoting Strickland v. Washington*, 466 U.S. at 687.

Before this Court, appellate defense counsel have filed a veritable catalogue of alleged insufficiencies regarding the investigation, preparation, and performance of the trial defense team, which was made up of both civilian and military counsel. The great bulk of this attack involves second-guessing tactical decisions, which we dismiss as mere Monday-morning quarterbacking. After a losing effort, hindsight usually suggests other ways that might have worked better; but that is not the measure of ineffective assistance of counsel.5/ One cannot read this record without appreciating the sustained. determined, professional effort made throughout by the trial defense team. Suffice it to say, if this trial defense effort constitutes ineffective assistance, few court-martial convictions can ever be sustained. We have carefully considered all of appellate counsel's allegations of ineffectiveness but remain satisfied that appellant received competent and energetic representation at trial.

The decision of the United States Army Court of Military Review is affirmed.

Chief Judge SULLIVAN and Judges CRAWFORD, GIERKE, AND WISS concur.

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Footnotes:

1/ Appellant was convicted of a single specification of committing an indecent assault, in violation of Article 134, Uniform Code of Military Justice, 10 USC § 934. He was sentenced to be dismissed from the service. The

convening authority approved the sentence, and the Court of Military Review affirmed in an unpublished opinion dated September 30, 1991, with one judge dissenting.

2/ We granted these issues for review:

I

WHETHER APPELLANT SUFFERED INEFFECTIVE ASSISTANCE OF COUNSEL BECAUSE OF COUNSEL'S FAILURE TO: REASONABLY INVESTIGATE APPELLANT'S CASE; ADEQUATELY PREPARE FOR TRIAL; AND ZEALOUSLY ADVOCATE ON APPELLANT'S BEHALF, CONSIDERING SAID FAILURES SINGLY OR IN CUMULATIVE EFFECT.

II

WHETHER THE EVIDENCE WAS [LEGALLY] SUFFICIENT TO SUSTAIN A CONVICTION.

3/ The surgeons left shortly after concluding the operation. The operating-room nurse readied the operating room for another surgery, then asked appellant if he needed assistance in recovering M. Appellant said he did not, so the operating-room nurse went home. The operating-room technician, who remained on duty, checked in with appellant to see if he needed her assistance. Appellant said he did not, so she left the floor to obtain additional supplies for the operating room. She was off the floor for perhaps half an hour. M's mother, a licensed practical nurse on staff with the hospital, was forbidden to enter the operating/recovery-room area. She waited in a staff lounge at the opposite end of the building, though on the same floor. As the operating-room complex

entailed the entire floor of the hospital, and owing to the lateness of the hour, only appellant, M, and M's mother were on that floor of the building for a considerable period of time during M's recovery.

4/ Among other possibilities, the direction of this cross-examination implied that appellant may have administered the drug droperidol to M for the purpose of inducing amnesia – not to combat nausea as claimed, but to prevent her from remembering the molestation. Another possible implication was that appellant may have not actually administered droperidol at all but merely claimed to have done so in order to counter any later accusations (droperidol being known to induce dissociation in some cases).

5/ One strand of appellant's criticism invites attention: It involves the alleged failure of trial defense counsel to investigate and advocate the potential role and side effects of the drug nitrous oxide, which was administered to M during the surgery itself. As noted, however, the defense addressed the side effects of all the drugs administered M, including nitrous oxide – as did the prosecution in rebuttal. As it happens, the witnesses at trial focused more on other drugs administered to M as being more likely candidates for causing hallucinations, if any.

Subsequent to the conclusion of the court-martial, the defense (chiefly through several of its trial experts) has mustered additional literature about the potential side effects of nitrous oxide. Unfortunately for the appellant, a review of this literature suggests that much of it underscores the very reasons why the trial witnesses did not consider nitrous oxide to be a principal candidate for

causing hallucinations – namely, that its side effects are usually observed when it is used alone, not in conjunction with the heavier forms of sedation incident to major surgery.

Had the information now adduced been of such a nature as to suggest that a miscarriage of justice occurred (*i.e.*, that "[t]he newly discovered evidence, if considered by a court-martial in the light of all other pertinent evidence, would probably produce a substantially more favorable result for the accused" – RCM 1210(f)(2), Manual for Courts-Martial, United States, 1984), the most efficacious procedure would have been to petition for a new trial based on newly discovered evidence. Art. 73 UCMJ, 10 USC § 873; RCM 1210(f)(2). Indeed, we note that many of these scientific articles were available to appellant even before the convening authority's action and were incorporated into a petition for clemency prepared by the same counsel now representing appellant on appeal. Further, it appears that all of the articles were known to appellant and cited to the Court of Military Review (in conjunction with an inadequacy-of-representation claim) prior to expiration of the period allotted for new trial petitions (2 years from the date of the convening authority's action). Now, however, it appears that the statutory window for such petitions has passed without a petition having been filed. In view of the general nature of the literature here presented, we are inclined to agree with counsel's implicit recognition that the probable success of such a petition was low.

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UNITED STATES ARMY COURT OF MILITARY REVIEW

Before
NAUGHTON, GRAVELLE, and JOHNSTON
Appellate Military Judges

UNITED STATES, Appellee

v.

Captain MYRON D. SANDERS,
522-66-7098,
United States Army, Appellant

ACMR 8902717

1st Infantry Division (Mech)
& Fort Riley

R. D. Russell,
Military Judge

For Appellant: Pedro Irigonegaray, Esquire (argued), Captain Pamela J. Dominisse, JAGC, Captain Robert C. Wee, JAGC, Captain Michael Huber, JAGC (on brief).

For Appellee: Captain Steven M. Walters, JAGC, (argued), Colonel Alfred F. Arquilla, JAGC, Lieutenant Colonel Daniel J. Dell'Orto, JAGC, Captain Timothy W. Lucas, JAGC, Captain Randy V. Cargill, JAGC, Captain Jonathan F. Potter, JAGC (on brief).

30 September 1991

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MEMORANDUM OPINION

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Per Curiam:

A general court-martial composed of members convicted the appellant, a nurse anesthetist, contrary to his

plea, of indecently assaulting an eighteen-year-old-female patient in a hospital recovery room after emergency gall-bladder surgery in violation of Article 134, Uniform Code of Military Justice. He was sentenced to be dismissed from the service. The convening authority approved the sentence.[1]

The appellant contends that he was denied the effective assistance of his civilian and military trial defense counsel because they failed to properly investigate his case, prepare his witnesses, and properly focus his defense.[2] We disagree.

We have carefully considered the issue of ineffective assistance of defense counsel at trial as briefed and orally argued by the appellate defense counsel and as personally asserted by the appellant and find it to be without merit. We additionally note that we have also considered the affidavits of counsel and the appellant, as well as the

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[1] The appellant was sentenced "[t]o be dismissed from the service." The convening authority's action read in pertinent part: "In the case of Captain Myron D. Sanders, . . . the sentence is approved." The action should have read: "The sentence to a dismissal from the service is approved but will not be executed pending completion of appellate review."

[2] At trial, the appellant presented a good soldier (nurse/anesthetist) defense coupled with evidence that the victim was suffering from hallucinatory side effects caused by the various drugs and anesthesia agents given to the victim before, during, and after her surgery. On appeal, the appellant claims that his defense counsel at trial were particularly ineffective for their failure to concentrate their efforts on the hallucinatory side effects of nitrous oxide gas, *i.e.*, the victim was not in fact assaulted but was experiencing nitrous oxide induced sexual fantasies or hallucinations.

record of trial,[3] and we are convinced that the trial defense counsel's conduct was within the standards set forth in *Strickland v. Washington*, 466 U.S. 668 (1984).

Although not raised as an error, we have also specifically considered the factual and legal sufficiency of the evidence in the appellant's case. After viewing the evidence in the light most favorable to the Government, we find that the court members could have found beyond a

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[3] In addition to considering the appellant's affidavits concerning his trial defense counsel's representation (Defense Appellate Exhibits A and I), appellate defense counsel moved to admit: the post-trial affidavit of Lieutenant Colonel Jill R. Keeler, a defense expert witness at trial (Defense Appellate Exhibit B); the post-trial affidavit of Lieutenant Colonel Dale A. Douglas, a defense character and expert witness at trial (Defense Appellate Exhibit C); the post-trial affidavit of Dr. John R. Lyons, which described his personal experience with a nitrous oxide induced hallucination of a sexual nature during dental surgery (Defense Appellate Exhibit D); the post-trial affidavit of Major James T. Muller, which details his role in bringing the nitrous oxide defense to the appellant's attention after trial (Defense Appellate Exhibit E); the post-trial affidavit of Delores F. Pannozza, which described a vivid dream of having sex with her dentist while coming out of nitrous oxide anesthesia during dental surgery (Defense Exhibit F); a listing of medical treatises (Defense Appellate Exhibit G); and, the post-trial affidavit of Dr. Robert L. Campbell, which stated that he had examined the anesthesia record of the victim as well as other matters presented at the appellant's trial and "[b]ased on my training, research, and experience, I am of the opinion that Captain Sanders may very well be innocent of the charges against him, and it is quite possible that the patient could have hallucinated the entire episode of alleged sexual touching." (Defense Appellate Exhibit H). We denied the motion to admit Defense Appellate Exhibits E, F, and H, and granted the motion to admit and have considered Defense Appellate Exhibits A, B, C, D, G, and I.

reasonable doubt the essential elements of the offense of indecent assault. *Jackson v. Virginia*, 443 U.S. 307 (1979). Reviewing the evidence in the record of trial for factual sufficiency, and making allowances for not having personally observed the witnesses, we are convinced of the appellant's guilt beyond a reasonable doubt. Article 66(c), UCMJ; *United States v. Turner*, 25 M.J. 324, 325 (C.M.A. 1987).

The findings of guilty and the sentence are affirmed.

JOHNSTON, Judge, dissenting:

Two separate but somewhat related aspects of this case cause me to dissent: the cumulative impact of numerous small errors amounting to ineffective assistance of trial defense counsel; and, the factual insufficiency of the evidence.

I.

Appellate defense counsel contends that CPT Sanders suffered substantial prejudice at his trial from the ineffective assistance of counsel. The claim has several separate components, although not all of these aspects of the case were specifically alleged as error.

a. Inadequate preparation of the defense experts. In my opinion, the standard enunciated in *Strickland* may not be met when a defense counsel fails to give an expert witness adequate time to prepare for testifying, does not give him enough time to review the pertinent records, or otherwise does not take adequate steps to prepare the expert to testify. In this case, the expert told the defense

counsel that she had examined the record and was prepared to testify. Nevertheless, the defense counsel should have the obligation of carefully checking the thoroughness of the expert's preparation in light of the limited time available to her to examine the medical records and her inexperience in testifying as an expert. One of the post-trial affidavits alleges that part of the case preparation time was a rather informal discussion between counsel and the defense expert while eating dinner. In my view, a discussion over dinner between the defense counsel and an inexperienced expert witness may not be adequate preparation to meet the demands of *Strickland*.

b. Inadequate presentation of the defense theory of drug induced hallucinations. In my view, the failure of a defense expert to conduct an exhaustive literature search prior to trial is attributable to the defense counsel as ineffective assistance. Counsel has the obligation to evaluate the strength of the defense case, including the qualifications of defense experts, and the thoroughness of their research. In addition, in light of the inexperience of the defense expert in this case, the failure to call additional defense experts or to introduce learned treatises buttressing the defense theory of the case provides additional indicia of ineffective assistance.

c. Inadequate medical research prior to trial. While a defense counsel may rely upon a client with a medical specialty to *assist* in conducting specialized medical research in a criminal case, I am persuaded that the client's personal involvement in the case and presumed bias should indicate to a reasonably prudent defense counsel that the client's research is likely to be incomplete or otherwise inadequate.

d. Failure to follow up on an objection to inadmissible testimony by the mother. Testimony by the victim's mother suggested that CPT Sanders' behavior towards her was inappropriate, and implied that he was the type of person who would molest women. Defense counsel raised the issue of the victim's mother's testimony in limine, but failed to follow up when the witness testified. In my view, the failure to persist in an attempt to keep that information from the members is an indication of ineffective assistance of counsel.

e. Failure to object to inadmissible testimony by the Criminal Investigation Division (CID) agent. Although the CID agent testified at length about what the victim told him, the defense counsel failed to raise a hearsay objection. The CID agent then verified what he was told, implying that everything the victim told him was the truth. While cross-examination may have limited possible damage, the failure to object is an additional indication of ineffective assistance.

f. Failure to object to post traumatic stress disorder (PTSD) testimony presented in rebuttal to the defense case. In the ordinary case PTSD testimony goes to the victim's state of mind at the time of the offense. For example, in a rape case where consent is an issue, PTSD testimony would show that the victim's behavior after the incident was consistent with a person who had been traumatized rather than a person who consented to having sex. PTSD testimony is relevant in establishing the state of mind of a victim of a real event. In this case, however, the issue is whether the event happened at all, not whether the victim believed that it happened. Thus PTSD testimony in this case went to the ultimate issue

(was there a real event, a molestation) rather than was there any issue of consent. The failure to object to the PTSD testimony on the basis of relevance is yet another indicia of the ineffective assistance of counsel.

The concept of "cumulative error" in the ineffective assistance of counsel context has been recognized by several courts. *See Walker v. Davis*, 840 F.2d 834 (11th Cir. 1988); *United States v. McDonald*, 44 C.M.R. 138, 141 (C.M.A. 1971) and cases cited therein discussing "cumulative omissions." While the individual errors and omissions by the defense team in this case may not amount to the ineffective assistance of counsel, I am persuaded that the cumulative impact had that effect.

II.

Although not alleged as error, I am not convinced that the evidence was factually sufficient to sustain the conviction. Several distinct aspects of the case have caused me to reach this conclusion.

a. The defendant presented a credible denial to the alleged offense. He was described by his superiors and coworkers as an outstanding officer and nurse-anesthetist who had very high standards of practice. He was also described as being "very forthright, very truthful," and "a truthful person."

b. The defense experts testified that the drugs the victim was given could have resulted in sexual hallucinations that were extremely real and believable, but had no basis in fact. Government experts were not able to

directly address the defense expert's contentions, and instead minimized their conclusions.

c. A recovery room nurse with ten years experience in recovering 18,000 patients, testified as an expert that it was "very odd" and "inconsistent" for the victim to testify that her lower body felt "dead," but she nevertheless felt the fingers being inserted into her vagina, but did not feel her bladder being checked. The test for checking a full bladder was to press down on the abdomen area just above the pubic bone. The nurse testified that patients normally awakened when their bladder was checked. In my view the Government has not proven the offense beyond a reasonable doubt when, a credible expert questions the validity of testimony by the victim that she could not recall a bladder check, and that her lower body felt "dead," but she felt her vagina being manipulated.

d. The victim recalled only two specific events in the recovery room; one telephone call and the molestation. She did not recall any of the many other events that happened: manipulation of the incision site and checking of the surgical wound dressing; manipulation of the bladder; changing of electrode leads on the chest area; replacement of a blood pressure cuff on her arm; removal of a pulse oximeter on the index finger of her other arm; removal and replacement of sheets and blankets; raising herself on one elbow, turning, and complaining of being nauseated; loosening and tightening of restraining strap that crossed her body at her upper thigh; and, at least one other telephone call. The victim testified that she opened her eyes, saw the defendant standing at her side, and felt him touch her vagina. She closed her eyes, and suddenly he was standing on the other side of her bed. She could

not recall how he got to her other side. I am not convinced that much weight should be given to her testimony when she could recall only a limited number of events and her perception may have been altered or distorted because of the effects of the drugs administered to her.

e. The defendant had the technical expertise and opportunity to administer drugs to ensure that the victim could not possibly remember any molestation or other improper actions he might choose to take. How likely is it that he would molest her without taking these precautions? The event was totally out of character for him. How likely is it that an apparently highly motivated, very competent nurse-anesthetist with admittedly high professional standards suddenly would depart from his normal behavior and standards and molest a patient? In my view, the Government failed to answer these questions beyond a reasonable doubt.

The victim in this case may truly believe that the molestation occurred, but in my view the evidence presented at trial did not prove beyond a reasonable doubt that the crime actually happened.

FOR THE COURT:
/s/ William S. Fulton, Jr.
WILLIAM S. FULTON, JR.
Clerk of Court

DEFENSE APPELLATE EXHIBIT
A

IRIGONEGARAY & ASSOCIATES
1535 S.W. 29th Street
Topeka, KS 66611-1901
(913) 267-6115

IN THE UNITED STATES
ARMY COURT OF MILITARY REVIEW

| | |
|---|---|
| UNITED STATES<br><br>v.<br><br>Captain Myron Dean Sanders, SSN 522-66-7098, U.S. Army, Headquarters and Headquarters Company & 16th Mobile Army Surgical Hospital, Fort Riley, Kansas 66442. | AFFIDAVIT<br><br>Case No. ACMR 89-02717<br><br>Tried at Patton Hall, Fort Riley, Kansas, on 30-31 August & 1st September, 1989, before a G.C.M. appointed by Commander, 1st Infantry Division (Mech) & Fort Riley. |

CAPTAIN MYRON DEAN SANDERS, having been duly sworn upon his oath, states:

1. On the first day of September, 1989, a six-member panel found me guilty of indecent assault on an eighteen-year-old woman named Marybeth Marks, who had been a patient of mine. I am appealing my conviction upon the grounds of ineffective assistance of counsel who failed to present available evidence regarding nitrous oxide-induced sexual hallucinations.

2. I have been a health care provider since 1969. I started out as a medic. Through military schooling, I became a Licensed Practical Nurse (LPN) in 1969. I worked as an LPN for over seven years in the U.S. Army. After being honorably discharged, I then augmented my income by working as an LPN while attending college for my nursing degree. After obtaining a BS degree in nursing and my RN license, I worked as a professional nurse in the recovery room at Scott and White Hospital in Temple, Texas. I then moved to the state of New York where I worked as an intensive care nurse and an emergency room nurse until I decided to rejoin the Army. After receiving my commission in 1981, 1 worked in the emergency department at Darnall Army Hospital, Fort Hood, Texas, for two years. From there, I attended the Army's school for nurse anesthetists. Upon completion of anesthetist school in December, 1985, I was assigned to Fort Riley, Kansas. Except for four months of temporary duty in Panama, and attendance at the AMEDD Officer Advance Course, I have since been working at Irwin Army Community Hospital (IACH) in Fort Riley, Kansas, as a nurse anesthetist.

3. I have been in the Army for almost seventeen years; of that seventeen years, approximately eight and one-half were as an enlisted soldier. During that enlisted time, I obtained the rank of Specialist Sixth Class; I was awarded the Good Conduct Medal on two different occasions; and I also received the Humanitarian Service Medal for work in Guatemala after the earthquake in 1976. In addition to official awards, I have an entire file of letters commending me on the excellence of my work. Since receiving my commission, I have received three

Army Achievement medals and an Army Commendation Medal for duty performance, as well as several letters commending me on my performance as a nurse and a soldier. I have never had any derogatory information placed on an evaluation of my work performance, nor have I ever had any accusations or disciplinary action taken against me, professionally or militarily.

4. I have been married for twenty years and have enjoyed a happy, loving and trusting relationship with my wife. Of course there have been difficult times in our marriage, but we have worked out the difficulties and continue with a fulfilling relationship. We have the kind of relationship that others look at, admire, and try to emulate.

5. I performed the anesthesia for Marybeth Marks on 12 May 1989, for her surgery to remove her gallbladder. Before the surgery began, I was asked by Major Johnson, the nursing supervisor, if I would recover the patient in the recovery room following her surgery. Even though I had already worked more than fourteen hours that day, I agreed. The anesthetic I administered to Miss Marks was a technique that is commonly called nitrous-narcotic technique. Briefly, this occurs when a narcotic agent is used to provide analgesia, nitrous oxide is used to provide unconsciousness, and a muscle relaxant is used to provide good surgical relaxation. In this case, I used approximately 70 percent nitrous oxide for nearly 90 minutes from 2155 to 2320. I also used Forane, a potent anesthetic agent, for approximately 40 minutes during the most stimulating part of the procedure to augment the effect of the nitrous oxide. For analgesia, I used Sufenta in incremental doses totaling two cc's, and for

muscle relaxation, I used Norcuron, which is a short-acting muscle relaxant, total dose six mg. The patient was transferred to the recovery room at approximately 2330, where I administered two cc's of Fentanyl, for pain, immediately after attaching the monitoring devices. Then, at approximately 2400, I administered one and one-quarter mg of droperidol to relieve the patient of nausea. I transferred the patient to the ward at 0030.

6. After charges were brought against me, Major Brian Nockleby was detailed to serve as my defense counsel. Captain Dan Rottinghaus was assistant defense counsel. After my Article 32 Hearing, because I wanted to ensure that I received adequate representation, on 7 July 1989, I hired a civilian attorney, Bruce Barry of Junction City, Kansas, to further represent me. He was recommended by Major Nockleby. I was expected to do much to prepare my own case for court-martial. For example, three days after I hired Mr. Barry as my civilian counsel, I gave him the attached list of potential character and expert witnesses. This was on July 10, 1989. *See* Attachment 1. In addition, in early July, I supplied to Mr. Barry the name of Dr. John R. Lyons, a veterinarian from Manhattan, Kansas, as another potential witness. My wife was working for Dr. Lyons at the time and learned that he had suffered a tactile sexual fantasy while under the effects of nitrous oxide in a friend's dental office. I suggested he be used as a witness since 1 had administered nitrous oxide to Ms. Marks and she had experienced a similar sensation. I also gave Mr. Barry the attached compilation of the events of 12 and 13 May 1989. *See* Attachment 2.

7. At Mr. Barry's request, I researched the medical literature for articles and information on the drugs I used

during the anesthesia and in the recovery room. I had the librarian at IACH medical library do computer searches for articles that contained information on hallucinations, sexual fantasies, and these drugs. Mr. Barry told me that he was researching the medical literature, using his own resources. My research revealed two articles on anesthetics and their potential to cause hallucinations; one article was by Crawford and Bashoff and was entitled "Fentanyl-Associated Delirium in Man," from *Anesthesiology*. It discussed how fentanyl, the agent I administered to Ms. Marks for pain upon her arrival in the recovery room, can cause delirium. *See* Attachment 3a. The second article, entitled "Awareness, Dreams, and Hallucinations Associated with General Anesthesia," from *Anesthesia and Analgesia*, demonstrated that nitrous oxide can cause hallucinations in patients. *See* Attachment 3b. I gave these articles to Major Nockleby and Mr. Barry, and told them I felt they were important to my defense, but the articles were not submitted by them nor mentioned at the court-martial.

8. In preparing for the court-martial, my attorneys, Major Nockleby, Bruce Barry, and I had several meetings that were supposedly to prepare me for my testimony. During one of these meetings, we went to the hospital and interviewed other witnesses and made a video tape of the layout of the operating room and its relationship to the recovery room. This was never used or mentioned at the court-martial. It would have shown that I would have had to stand with my back toward an open doorway in order to molest the patient. It would have demonstrated the difficulty of my being able to stand at Ms. Marks' right side, face her, and molest her with my right hand. I

am left-handed. In this area, you can hear no one coming or going because operating room personnel wear foot socks over their shoes. I have included a drawing of this area as Attachment 4. In another meeting, Bruce Barry discussed with me some of the questions that he was planning to ask me and the kind of responses he would be looking for; he stressed that I needed to remain professional and emotionally restrained. In our first meeting for preparation for trial, Major Nockleby and Mr. Barry presented questions in a mock trial setting; this lasted about an hour.

9. We also discussed potential witnesses; this meeting occurred about a week before the court-martial. My defense counsel, from another case, knew that Colonel Carolyn White was the nursing supervisor at IACH. They felt she should be called as a witness. She constituted the only witness called that I had not suggested. The expert witnesses were discussed and I was given the impression that our experts, Major Douglass and Lieutenant Colonel Keeler, would be contacted and prepared for testimony prior to the court-martial. In fact, I called each of them soon after providing their names to my counsel to inform them we would probably use them as witnesses in my defense. I gave them the nature of the charges against me and assured them they would be hearing from my attorneys in the near future to further explain what their testimony would entail. It was not until the day before the court-martial started that I found out that Major Douglass had not been contacted by my defense attorneys nor prepared for his testimony in the court-martial. Lieutenant Colonel Keeler met with my attorneys the night before she testified. Consequently, neither expert

felt he or she was fully prepared to give good testimony. My defense counsel heard that a psychologist had met with Ms. Marks subsequent to the incident and attempted to get records from this examination on 6 July and 21 August 1989. They limited their request for records to records from IACH professionals only. Thus, they failed to discover, before trial, that Susan Eyman, a civilian psychologist, had met with, and examined, Ms. Marks. My wife and I had discussed the apparent lack of preparation in my case by Mr. Barry; I discussed these concerns with Mr. Barry and he assured me that he would be ready to go to trial on the scheduled day.

10. As far as I can remember, there was no actual preparation of any witnesses for my court-martial by Mr. Barry and Major Nockleby until approximately ten days before the actual court-martial started, even though the trial date was known by my attorneys at the end of July, 1989. This lack of preparation, I was told, was due to Mr. Barry having two other cases coming to trial in the month of August. One was a military case with circumstances similar to mine; the other was a federal court case that was resolved without going to trial, the week before my court-martial. In the time between my hiring of Mr. Barry and the trial, I contacted Mr. Barry by phone at least once a week to get a status on preparation for trial, and each time was assured that everything was okay and that we would be ready for trial on the set date. It was mentioned several times that the timing was a little tight, but that everything would be ready when we needed it. It was not until approximately two weeks before the trial date that actual preparation for trial began, in what appeared to be a flurry of activity. *See* Billing Statements, Attachment 5.

Any questions my wife or I had about preparation were answered by "don't worry, we'll be ready."

11. My lawyers based their defense on my clean record as an excellent soldier and nurse. *See* Record, Vol. II, p. 167. One of the points made by prosecution at trial was that there are no documented case studies of sexual hallucinations resulting from anesthesia. It was also indicated at the trial that droperidol was the only drug that could have caused the kind of illusion Marybeth Marks experienced. *See* Record, Vol. IV, p. 735. After my conviction, my supervisor, Lieutenant Colonel Troop, called me and told me to come to his office. He had been given a book on sedation techniques by Major James Muller, an oral surgeon at IACH, which contained several pages relating to sexual phenomena that can occur with nitrous oxide sedation. At this point, I recognized that my earlier feelings were true; the nitrous oxide I had administered to Ms. Marks was probably the cause of her hallucination. After reading Major Muller's book, I concentrated my research on the side-effects of nitrous oxide. Through my own research, I discovered additional information regarding nitrous oxide that further rebuts the contentions made by the Government at the trial. Copies of these research articles follow this affidavit as Attachment 6.

12. These articles indicate that nitrous oxide can cause and enhance sexual fantasies and hallucinations and that nitrous oxide remains in the body longer than commonly thought. Based upon this new information, I believe that the patient had the illusion of being molested much sooner in the recovery room process than what was brought out at the trial, and that the nitrous oxide was

the primary cause of her sexual hallucination, not droperidol. *See* Record, Vol. IV, pp. 735-736. Based on the above-mentioned articles, I think Ms. Marks had the hallucinatory episode immediately upon entering the recovery room. It was at that time that I was on the right side of the gurney attaching the blood pressure cuff and then went to the left side of the gurney to attach the pulse oximeter sensor to her left index finger and attach the EKG lead wires to her chest. *See* Record, Vol. II, pp. 115-117. I also placed an oxygen mask on her face. During this time, Dr. Ludvigson and Private Evans, the operating room technician, were in the recovery room with me. Immediately, after getting the first set of vital signs, I called Captain Erickson to tell him I had Marybeth Marks in the recovery room. *See* Record, Vol. II, p. 288. After initiating the recovery room paperwork, I then returned to Ms. Marks to check her dressing to assess her recovery from the anesthetic, and to check her vital signs. All this activity took place within twenty minutes of the patient being on approximately 70 percent nitrous oxide in the operating room.

13. Attachments 6a, 6b, and 6c support the fact that nitrous oxide remains in the body for a period of time after it has been discontinued. In addition, Major James Muller performed a study at Walter Reed Army Medical Center which indicated that nitrous oxide remains in a patient's system for some time even after it has been turned off. His study would indicate that although Ms. Marks was no longer being given nitrous oxide in the recovery room, it was probably still present in her system for at least ten minutes. Therefore, Ms. Marks was still under the influence of nitrous oxide upon her arrival in

the recovery room and for a period of time thereafter. During this time, Dr. Ludvigson was with me, as I attached the monitors to the patient, and Private Evans was also on the floor. These articles coincide with the testimony of Ms. Marks in regard to my position in relation to the gurney and the content of the phone call. Ms. Marks' perceptions of where I was standing and partial content of the phone call were accurate. Her perception of being molested was totally inaccurate and, I believe, a nitrous oxide induced hallucination. Finally, I administered fentanyl to Ms. Marks to relieve her pain/nausea. This is a respiratory depressant and likely slowed the elimination of the nitrous oxide from her body even more.

14. Attachment 6f is an article that indicates dreaming under anesthesia is most likely to occur at induction or at recovery from anesthesia, after the muscle relaxants have worn off. *See* Attachment 6f. Attachments 6g through 6q are eleven articles from medical journals which further document sexual hallucinations and fantasies that occur during or immediately after nitrous oxide sedation. *See* Attachments 6g-6q. Many of these articles relate incidents which have occurred in a dental office setting and are contained in dental medicine journals. Although this case did not involve a dental procedure, the effects upon Ms. Marks from nitrous oxide are much the same as those occurrences in dentists' offices. In a dentist's office, a patient is usually administered nitrous oxide or laughing gas, by itself, in combination with no other drugs. Incidents of nitrous oxide induced sexual fantasies are more often reported after a dental procedure. In a medical setting, nitrous oxide is usually

combined with other intravenous drugs to provide adequate anesthesia. By itself, nitrous oxide does not provide enough "depth" of anesthesia for a surgical procedure. Because of the presence of other drugs with nitrous oxide, there are fewer reported cases of nitrous oxide hallucinations in the medical field. Also, it is my opinion that there is less one-on-one care administered in medical/surgical settings than in the dental office setting.

15. Normally, a nurse anesthetist is not involved with recovering the patient after the surgical procedure. Instead, he concentrates on merely keeping the patient anesthetized during surgery. It is very unusual for a nurse anesthetist to recover his own patient. I knew that I was expected to recover Ms. Marks, however. Therefore, I administered anesthesia to her in such a way that she would safely wake up immediately after surgery. I turned off the stronger inhalation agent during the last 30 to 40 minutes of the procedure. I administered nitrous oxide, only, after that point, so that the patient would wake up quickly post-surgically. The narcotic I had given earlier in the case had the potency and longevity to provide analgesia up to the end of the procedure. Therefore, nitrous oxide was probably the only agent remaining in her body when she arrived in the recovery room. This makes her case of a sexual fantasy nearly identical to those reported in the dental journals.

16. Doctors Theodore Jastak and Stanley Malamed did a retrospective study on nitrous oxide sedation and sexual phenomena. In this study, they cite nine cases where accusations were made against dentists after nitrous oxide was used to augment anesthesia for a dental procedure. *See* Attachments 6d 6d [sic] through 6q.

The following is a list of common factors that have been reported from recently recorded cases, similar to this case, involving the use of nitrous oxide as an anesthetic, as stated in Attachments 6d and 6e.

a. All of the complaints were from young females and involved a male health care provider.

b. None of the patients discussed her experience with the doctor after recovery from sedation.

c. Many women commented later on how shocked they were.

d. Several mentioned that they were unable to think clearly until the next day.

e. Formal complaints did not occur until either family members or friends were told of the experience and advice was sought on how to proceed.

f. No patient gave any indication of distress during treatment, but most mentioned spontaneously that they were frightened by the experience.

g. At the time of the perceived occurrence, the male doctor was alone in the treatment room with the female patient.

h. Concentrations in excess of 50 percent nitrous oxide were employed in every situation in which allegations of sexual misconduct were involved.

There are many similarities between this list of criteria and what the victim, Marybeth Marks, testified to. The preponderance of literature supports the theory that nitrous oxide does cause sexual hallucinations. *See*

Attachments 6d and 6e. Finally, Attachments 6r and 6s demonstrate that the post partum period is when mental disturbances may occur in women.

17. My research of the medical literature indicates that nitrous oxide is present in the body tissue of post-operative patients even though the drug was discontinued while the patient was still in the operating room. Further, the attached literary excerpts document the hallucinatory effects of nitrous oxide, and that it is more likely to cause such effects in emotionally unstable women. Finally, my present attorney has seen to it that my experts were given ample time to prepare the affidavits contained within this brief and have attached the results of their medical literature searches to their affidavits. They found even more articles than I have since the court-martial which cite the hallucinogenic side-effects of nitrous oxide.

18. The wealth of evidence gleaned from research articles found by me and my experts was not discovered until after the trial. If the full picture had been presented, I believe it would be very difficult for anyone to believe, beyond a reasonable doubt, that I was guilty of the crime of which I stand convicted. Based on the above-mentioned articles, what Ms. Marks perceived as a real event was a hallucination or sexual fantasy induced by residual nitrous oxide that was present in her system at that time. I did not sexually assault Ms. Marks in any manner.

Myron Dean Sanders
CAPTAIN MYRON DEAN SANDERS

STATE OF TEXAS, COUNTY OF HIDALGO, ss:

BE IT REMEMBERED that on this 16th day of July, 1990, before me, a notary public in and for the county and state aforesaid came CAPTAIN MYRON DEAN SANDERS, whom personally appeared before me to be the same person who executed the foregoing instrument and acknowledged execution of the same before me.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the date last above written.

(SEAL)
KIM MACHEN
NOTARY PUBLIC
STATE OF TEXAS
My Appointment expires Aug. 17, 1991

/s/ Kim Machen
Notary Public

My appointment expires 8/17/1991.

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SANDERS
ATTACHMENT
1

POTENTIAL WITNESSES

I. EXPERT WITNESSES

1. LTC Jill Keeler CRNA Ph.d phone Auto-van-584-4334/2803/2216/2639 Chief of research division WRAMC Has significant experience as clinical anesthetist

2. Col. Jim Temo CRNA
Consultant to SGO

Chief Nurse Anesthetist
Walter Reed Army Medical Center

3. LTC Michael Troop CRNA
Chief Nurse Anesthesia Service
IACH Ft. Riley Ks.

II. PROFESSIONAL CHARACTER WITNESSES

1. Maj. Dale Douglass CRNA Phone (817) 526-3287 H Autovan 238-8705
Course director Phase II Army Nurse Anesthesia program Darnall Army Community Hosp.
Ft. Hood Texas

2. Maj. Greg Walsh CRNA Phone 239-7669
Nurse Anesthetist
IACH Ft. Riley Ks.
Has worked with me here and at BAMC while I was a student

3. Maj. Barbara Jeleski R.N.
Recovery room Nurse
IACH Ft. Riley, Ks.

4. Cpt. Abino Ortega R.N.
Recovery room Head Nurse (personal friend)
IACH Ft. Riley, Ks.

5. Maj. Carol Taff R.N. Phone 239-7660
Operating Room Supervisor (has been here as long as I have, almost 4 yrs.)
IACH Ft. Riley Ks.

6. Maj. Kent Babcock CRNA Phone H-(404) 793-8319 Asst. Course Dir. Phase II anesthesia program DDEAMC Ft. Gordon, GA. (worked with me here for apprx. 1.5 yrs.)

III. PERSONAL CHARACTER WITNESS

1. Marilyn Miller
   Recently ETS'd, worked with me in OR still lives in J.C. – Ft. Riley area Phone 784-4287

2. PFC C. Matthews
   or Tech IACH
   duty phone 9-7660

3. Sgt. K. Peterson
   91C20
   16th MASH phone 9-4462/4226
   Ft. Riley, Ks.

**SANDERS**
**ATTACHMENT**
**3**

**SANDERS ARTICLES**

**PRETRIAL**

Attached are articles from medical treatises I found prior to court martial and gave to my defense counsel:

3-a Crawford, Robert David, and Baskoff, Joel David. "Fentanyl-associated Delirium In Man." *Anesthesiology.* 53 (1980): 168-169.

3-b Wilson, S.L., Vaughan, R.W., and Stephen, C.R., "Awareness, dreams, and hallucinations associated with general anesthesia." *Anesthesia and Analgesia.* 54 (1975): 609-617.

SANDERS
ATTACHMENT
5

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STATEMENT

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BENGTSON, WATERS & BARRY, CHARTERED
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MYRON DEAN SANDERS
P.O. BOX 339
OGDEN, KS 66517

100989222
US V.
08/04/89

THIS STATEMENT DOES NOT INCLUDE PAYMENTS RECEIVED AFTER THE 04TH

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FOR PROFESSIONAL SERVICES RENDERED:

3.85 HOURS FOR THE FOLLOWING SERVICES:

| DATE | ATTORNEY | TIME | DESCRIPTION |
|---|---|---|---|
| 07/14/89 | BARRY | 1.30 | WORK ON COURT-MARTIAL |
| 07/19/89 | BARRY | 0.50 | CONFERENCE WITH CHIEF OF MILITARY JUSTICE; TELEPHONE CONF W/MILITARY JUDGE AND TRIAL COUNSEL |

| | | | |
|---|---|---|---|
| 08/03/89 | BARRY | 0.75 | REVIEW FILE AND WITNESS STATEMENTS; WORK ON CASE |
| 08/04/89 | BARRY | 1.30 | CONFERENCE WITH CLIENT; TELEPHONE CONF W/CPT BOURNE; WORK ON TRIAL PREPARATION |

CHARGES FOR LEGAL FEES: 288.75

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| | |
|---|---|
| PREVIOUS BALANCE OWED/CREDIT | 0.00 |
| CURRENT PAYMENTS RECEIVED | 3000.00 |
| CURRENT FEES AND COSTS ADVANCED | 288.75 |
| CREDIT BALANCE | 2711.25CR |

YOUR PROMPT PAYMENT WILL BE
GREATLY APPRECIATED

---

BENGTSON, WATERS & BARRY, CHARTERED END

---

STATEMENT

BENGTSON, WATERS & BARRY, CHARTERED
ATTORNEYS AT LAW
1206 W 8th STREET
JUNCTION CITY, KS 66441

MYRON DEAN SANDERS
P.O. BOX 339
OGDEN, KS 66517

100989222
US V.
08/31/89

THIS STATEMENT DOES NOT INCLUDE PAYMENTS RECEIVED AFTER THE 31ST

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FOR PROFESSIONAL SERVICES RENDERED:

75.75 HOURS FOR THE FOLLOWING SERVICES:

| DATE | ATTORNEY | TIME | DESCRIPTION |
|---|---|---|---|
| 08/04/89 | BARRY | 0.75 | CONFERENCE WITH CLIENT |
| 08/07/89 | BARRY | 0.30 | TELEPHONE CONFERENCE WITH MAJ NOCKELBY |
| 08/09/89 | BARRY | 1.75 | CONFERENCE WITH CLIENT AND MAJ NOCKELBY |
| 08/11/89 | BARRY | 1.90 | PREPARE FOR COURT-MARTIAL; TELEPHONE CONF W/CLIENT; TELEPHONE CONF W/LTC JILL KEELER |
| 08/18/89 | BARRY | 1.50 | REVIEW ARTICLE 32-MEDICAL RECORDS; TELEPHONE CONF W/CLIENT; CONFRENCE [sic] W/DR. THOMAS COLEMAN |

| | | | |
|---|---|---|---|
| 08/21/89 | BARRY | 0.80 | TELEPHONE CONFERENCE WITH CLIENT; TELEPHONE CONF W/CPT BOURNE; PREPARE FOR TRIAL |
| 08/22/89 | BARRY | 1.70 | TELEPHONE CONFERENCE WITH CPT BOURNE AND CPT ROTTINGHOUSE; PREPARE FOR TRIAL |
| 08/23/89 | BARRY | 1.40 | TELEPHONE CONFERENCE WITH CLIENT; REVIEW FILE; PREPARE FOR TRIAL |
| 08/24/89 | BARRY | 3.40 | TELEPHONE CONFERENCE WITH MAJ NOCKELBY AND CPT ROTTINGHOUSE; TELEPHONE CONF W/CLIENT (X2); TELEPHONE CONF W/WITNESS; PREPARE FOR TRIAL; TELEPHONE CONF W/DR. THOMAS COLEMAN |

BENGTSON, WATERS & BARRY,
CHARTERED CONTINUED

FOR PROFESSIONAL SERVICES RENDERED:

| DATE | ATTORNEY | TIME | DESCRIPTION |
|---|---|---|---|
| 08/25/89 | BARRY | 8.25 | PREPARE FOR TRIAL; COORDINATE W/CLIENT, MAJ NOCKLEBY AND CPT ROTTINGHOUSE; INTERVIEW WITNESSES-COL WHITE; MAJ JELESKI; SGT JAMES, SGT WILLIAM CAREY, DR. MULLER |
| 08/28/89 | BARRY | 3.50 | PREPARE ~~FOR~~ CLIENT FOR TRIAL; PREPARE FOR TRIAL |
| 08/29/89 | BARRY | 11.00 | PREPARE CLIENT FOR HEARING; ~~ATTEND GENERAL COURT MARTIAL;~~ BCB PREP AND INTERVIEW WITNESS |

| | | | |
|---|---|---|---|
| 08/30/89 | BARRY | 16.50 | ATTEND GENERAL COURT-MARTIAL; ARTICLE 39A SESSION; PREPARE WITNESSES AND INTERVIEW WITNESSES |
| 08/31/89 | BARRY | 13.50 | ATTEND 39A SESSION; ATTEND GENERAL COURT MARTIAL |
| 09/01/89 | BARRY | 9.50 | ATTEND GENERAL COURT-MARTIAL; PREPARE CLIENT FOR SENTENCING; ATTEND SENTENCING; POST TRIAL ADVICE |

CHARGES FOR LEGAL FEES:
5681.25

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COSTS ADVANCED:

| DATE | DESCRIPTION | COST |
|---|---|---|
| 08/18/89 | POSTAGE | 10.25 |
| 08/25/89 | TRAVEL TO FORT RILEY | 5.40 |
| 08/25/89 | VIDEO TAPE | 3.89 |
| 08/31/89 | TRAVEL EXPENSE | 6.50 |

CHARGES FOR COSTS ADVANCED: 26.04

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BENGTSON, WATERS & BARRY,
CHARTERED CONTINUED

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| | |
|---|---|
| PREVIOUS BALANCE OWED/CREDIT | 2711.25CR |
| CURRENT PAYMENTS RECEIVED | 0.00 |
| CURRENT FEES AND COSTS ADVANCED | 5707.29 |
| AMOUNT DUE | 2996.04 |

| CURRENT CHARGES | 30 DAYS OVERDUE | 60 DAYS OVERDUE | 90 DAYS OVERDUE | UNPAID INTEREST |
|---|---|---|---|---|
| 2996.04 | 0.00 | 0.00 | 0.00 | 0.00 |

YOUR PROMPT PAYMENT WILL
BE APPRECIATED

---

BENGTSON, WATERS & BARRY, CHARTERED END

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SANDERS
ATTACHMENT
6

SANDERS ARTICLES
POST-TRIAL

Attached are articles from medical treatises I found after the court-martial.

A. Articles relating the retention of nitrous oxide in the body, even after administration thereof has ended:

6-a Stoelting, Robert K., and Eger, Edmond I. "The Effects of Ventilation and Anesthetic Solubility on Recovery from Anesthesia." *Anesthesiology*. 30 (March 1969): 290-296.

6-b Sheffer, L., Steffenson, J.L., and Birch, A.A. "Nitrous-Oxide induced Diffusion Hypoxia in Patients Breathing Spontaneously." *Anesthesiology*. 37 (October 1972): 436-439.

6-c Sher, A.M., Braude, B.M., Cleaton-Jones, P.E., Moyes, D.G., Mallett, J. "Nitrous oxide sedation in density." *Anathesia* 39 (1984): 236-239.

B. Articles regarding specific examples of nitrous oxide hallucinations.

6-d Jastak, J. Theodore, and Malamed, Stanley F. "Nitrous Oxide Sedation and Sexual Phenomena." *Journal of the American Dental Association*. 101 (1980): 38-40.

6-e Malamed, Stanley F. Sedation: *A Guide to Patient Management*. C.V. Mosby, 1985, pp. 254-257.

C. Article specifying when dreams from anesthesia are most likely to occur.

6-f Smith, J.M., Utting, J.E., and Whitford, J.H. "Dreaming Under Anesthesia." *British Journal of Anathesia*. 44 (1972): 415-416.

D. Articles discussing the incidence of nitrous oxide induced sexual fantasies.

6-g Abouleish, Ezzat, and Taylor, Floyd H. "Effect of Morphine-Diazepam on Signs of Anesthesia, Awareness, and Dreams of PatientsUnder [sic] $N_2O$ for Ceserean [sic] Section." *Anesthesia and Analgesia* 55 (Septmeber [sic] and October 1976): 702-705.

6-h Bergstrom, H., and Berstein, K. "Psychic Reactions After Analgesia with Nitrous Oxide for Ceserean [sic] Section." *The Lancet* (September 7, 1968): 541-542.

6-i Brodsky, Lewis, and Zuniga, Jorge. "Nitrous Oxide: A Psychotogenic Agent." *Comprehensive Psychiatry* 16 (March/April 1975): 185-188.

6-j Duncan, Gary H., and Moore, Paul. "Nitrous Oxide and the dental patient: a review of adverse reactions." *Journal of the American Dental Association* 108 (February 1984): 213-219.

6-k Gillman, M.A., "Assessment of the Effects of Analgesic Concentrations of Nitrous Oxide on Human Sexual Response." *International Journal of Neuroscience* 43 (1988): 27-33.

6-l Gillman, Mark A., and Lichtigfeld, Frederick J. "The Effects of Nitrous Oxide and Naloxone on Orgasm in Human Females: A Preliminary Report." *The Journal of Sex Research* 19 (February 1983): 49-57.

6-m Jastak, J.T., and Paravecchio, R. "An analysis of 1,331 sedations using inhalation, intravenous, or other techniques." *Journal of the American Dental Association* 91 (December 1975): 1242-1249.

6-n Lambert, Colin. "Sexual phenomena hypnosis and nitrous oxide sedation." *Journal of the American Dental Association* 105 (December 1982): 990-991.

6-o Reyes-Guerra, Antonio. "Erotic Complications in the Dental Office Under Anesthesia." Quintessence International 7 (July 1983): 1-3.

6-p Reyes-Guerra, Antonio, Jr. "Erotic Complications of Dental Anesthesia." Pain and Control in Dentistry 9-2 1:5 (December 1982).

6-q Rosenberg, P. "The Effect of $N_2O$ – Oxygen Inhalation on Subjective Experiences of Healthy

Young Adults." *Annales Chirurgiae et Gynaecologiae Fenniae* 63 (1974): 500-504.

D. Articles relating the effects of a prior delivery on a patient.

6-r Brockington, Ian F., Cernik, Kate F., Schofield, Elizabeth M., Downing, Allan R., Francis, Anthony F., and Keelen, Christine. "Puerperal Psychosis." *Archives of General Psychiatry* 38 (July 1981): 829-833.

6-s Weinger, Matthew B., Swerdlow, Neal R., and Millar, Walter L. "Acute Postoperative Delirium and Extrapyramidal Signs in a Previously Healthy Parturient." *Anesthesia Analgesia* 67 (1988): 291-295.

**SANDERS**
**AFFIDAVIT II**
**EXHIBIT I**

IN THE UNITED STATES ARMY COURT
OF MILITARY REVIEW

| | |
|---|---|
| UNITED STATES,<br>Appellee,<br>v.<br>Captain Myron Dean Sanders,<br>522-66-7098, United States Army,<br>Appellant. | ASSIGNMENTS OF ERROR<br>ACMR 89-02717<br>First Infantry Div. (Mech) and Fort Riley |

AFFIDAVIT

I, MYRON DEAN SANDERS, of lawful age, after being first duly sworn upon my oath, depose and state:

1. I have certain responses to make to the allegations that Mr. Barry made in his affidavit submitted with the appellee's brief hereinl. [sic] Mr. Barry comments in Paragraph No. 1 of his affidavit that he "consistent with my [his] professional schedule, diligently prepared for the trial. . . . " What he does not say is that he had a similar trial two weeks prior to mine and then had a federal court case in Topeka that was settled less than a week prior to the beginning of my trial. His excuse to me any time I asked about preparing for my trial was, "As soon as I finish up with this, we will start working on your case." (Record, Volume I, at pp. 25-37) In Paragraph No. 2, Mr. Barry mentions numerous meetings. In review of the itemized bill from Mr. Barry, it appears there were

five meetings with me, three of which occurred the week of the trial. There are five phone conferences listed, most of which were initiated by me, or were calls from him returning my calls when he was busy or out of his office. Some of those phone calls were no more than 10 to 15 minutes in length.

2. Also, in Paragraph No. 2, Mr. Barry discusses the point of using me as the primary research person for the drugs used in the anesthesia for Ms. Marks. I did agree to research the drugs used, but was under the assumption that other avenues of research were being used also. He also makes a comment about me being relieved of my anesthesia duties, which I was, but I was assigned to an administrative position and had responsibilities and duties to perform in that position.

3. In the last comment in Paragraph No. 2, Mr. Barry indicates he spent several hours questioning Lieutenant Colonel Keeler about the drugs used in the Marybeth Marks case and in preparing Lieutenant Colonel Keeler for testimony. At least two of these several hours were spent eating dinner at a local restaurant with Major Knockleby, Lieutenant Colonel Douglas, Captain Rottinghouse, Irene, and myself. We finished eating about 9:00 p.m. and then went back to Major Knockleby's office.

4. In Paragraph No. 5, Mr. Barry addresses the claim that the defense was hastily prepared. He cites the psychological testing done by Dr. Coleman. It is true that I did have the testing done the first part of August and the decision not to use that information was made almost immediately after the results were reviewed by Dr. Coleman and presented to Mr. Barry. However, most of the

prospective witnesses were interviewed less than a week prior to the trial, most of them within a day or two of the trial. The two expert witnesses were interviewed the night of the first day of the trial. The bill from Mr. Barry indicates that a total of 4.65 hours were spent by him for work on this case, other than the time spent in conferences with client, other lawyers, or preparing witnesses for testimony.

5. Paragraph No. 6 of Mr. Barry's statement and Paragraph No. 2 of Major Knockleby's statement discuss the fact that Dr. Lyons was not called to testify at the trial, and that Lieutenant Colonel Keeler effectively related the substance of Dr. Lyons' testimony. In Lieutenant Colonel Keeler's testimony, she gave a very general summary of the situation that Dr. Lyons experienced, which is all she could have done since the only contact she had with Dr. Lyons was a phone conversation with him the day before her testimony. (Record, Volume I, at pp. 546-548, 592-599)

6. I also have comments in response to Major Knockleby's affidavit. In his first paragraph, he states that I agreed to assume the responsibility for the medical research. Actually, what I did was to offer my help in researching the medical aspects of the case. One of the reasons I gave my counsel the names of Lieutenant Colonel Keeler and Lieutenant Colonel Douglas was that they were in a much better situation to do research, since one was in a research position and the other was in a teaching position. Either one of those individuals had much better access to reference literature than I. It is my recollection that I stressed that point with my counsel.

7. Concerning the comments in Paragraph No. 4 of Major Knockleby's affidavit about the phone number of Lieutenant Colonel Douglas, I gave my counsel his correct home phone number but somehow the area code had been recorded incorrectly in their notes. It was not until the day before the trial that they indicated they could not contact Lieutenant Colonel Douglas, which indicates to me how late they waited before even trying. Once they informed me of this, I corrected the number they had and they contacted him. Lieutenant Colonel Douglas is a close friend and I had been in contact with him several times prior to the trial and he had expressed concern that my lawyers had not contacted him earlier. (Record, Volume I, at pp. 25-37)

8. Major Knockleby discusses the tactical decisions made about the submission of the videotape and the articles indicating there had been reported hallucinations associated with the drugs I had given Ms. Marks. To the best of my recollection, I was not consulted regarding these decisions, nor was I informed of the reasons why they were not admitted as evidence. As a matter of fact, I thought they were going to admit the articles that I had found. It was not until the trial was over that I realized the articles were not going to be submitted.

9. As to the issue of when Lieutenant Colonel Keeler was first contacted, I distinctly remember her saying that the only time she had to review the Marybeth Marks case records was on the flight to Texas from Maryland. Both she and Lieutenant Colonel Douglas spent the night before their testimony reviewing records and preparing for their testimony.

AND FURTHER AFFIANT SAITH NOT.

/s/ Myron Dean Sanders
Myron Dean Sanders

SUBSCRIBED AND SWORN TO before me this 9th day of May, 1991.

[SEAL]

/s/ Nilda H. Alvarez
Notary Public

My appointment expires 03/02/95.

DEFENSE APPELLATE
EXHIBIT B

IRIGONEGARAY & ASSOCIATES
1535 S.W. 29th Street
Topeka, KS 66611-1901
(913) 267-6115

IN THE UNITED STATES ARMY COURT
OF MILITARY REVIEW

| | |
|---|---|
| **UNITED STATES**<br><br>v.<br><br>**Captain Myron Dean Sanders,** SSN 522-66-7098, U.S. Army, Headquarters and Headquarters Company & 16th Mobile Army Surgical Hospital, Fort Riley, Kansas 66442. | **AFFIDAVIT**<br><br>Case No. ACMR 89-02717<br><br>Trial at Patton Hall, Fort Riley, Kansas, on 30-31 August & 1st September, 1989, before a G.C.M. appointed by Commander, 1st Infantry Division (Mech) & Fort Riley. |

**JILL R. KEELER,** having been duly sworn upon her oath, states:

1. I am a CRNA, hold a Ph.D. in pharmacology, and as such, was invited to give expert testimony at Captain Dean Sanders' court-martial on August 31, 1989. I am currently assigned to the U.S. Army Medical Research Institute of Chemical Defense (USAMRICD) and work on the development of pretreatment and treatment drugs against chemical warfare agents.

2. Attached is a copy of my curriculum vitae, marked as Attachment 1.

3. There was a significant problem with respect to my participation in the trial: the defense lawyers did not contact me until the week prior to the trial, and in fact, background information was sent to my hotel where I was on temporary duty out of town, two working days prior to the trial. After completion of my duties that week, I had two working days to "prepare" prior to the trial.

4. As such, my testimony consisted solely of relating the pharmacologic properties of the drugs administered to Marybeth Marks in the operative and perioperative periods, as well as a few personal anecdotal experiences. This testimony was given purely out of my own knowledge, as there was no opportunity to do the necessary medical literature search. Referenced literature citations would have certainly assured the jury that dreams or hallucinations of a sexual nature in the course of recovery from general anesthesia were not uncommon.

5. I have talked to three people who have had fantasies of a sexual nature following general anesthesia with nitrous oxide. Two are co-workers here at USAMRICD, one of whom is Dolores F. Pannozza. Another is Dr. John Lyons, a veterinarian in the Fort Riley, Kansas, area, whom I was told about by Captain Dean Sanders' lawyers before the court-martial, and with whom I spoke by telephone when I was in Kansas. During my testimony at the trial, the defense lawyers asked me to relate the veterinarian's experience. I did so, but found it curious that the defense lawyers did not ask him to give firsthand testimony, since he was available locally.

6. Several of the drugs Ms. Marks received alter mental acuity because they readily gain access to the brain, and that is absolutely their purpose in the course of a standard anesthetic. These include sodium thiopental, sufentanil, droperidol, isoflurane and nitrous oxide. (Please refer to the anesthesia record, SF 517, and post anesthesia recovery room flowsheet, DA 4700, 12 May 1989.) Theoretically, any of these could alter one's perception of reality when the drug is at a level in the bloodstream which is below that necessary for "sleep." This level of consciousness can be described as a hypnotic state that is facilitated by certain centrally active drugs, including nitrous oxide. This is the level of consciousness most often encountered in the recovery room in patients who have had a general anesthetic, i.e., not entirely awake and coherent, nor entirely asleep. Hallucinations of a sexual nature can occur at this state of wakefulness. *See* Lambert, 1982, Attachment 14.

7. Now, having had the opportunity to peruse the published medical reports on this topic, however, I strongly suggest that nitrous oxide was the source of Ms. Marks' sexual hallucinations. A literature research resulted in thirty to forty "finds" using "nitrous oxide" and "hallucinations" as key words within a medical literature data base. Copies of selected articles are attached as Attachments 2 through 20, all of which were obtained by me pursuant to the request of Captain Sanders' present defense counsel, Pedro L. Irigonegaray. The incidence of post-operative unpleasant dreams or hallucinations associated with general anesthesia has been reported to be from 1.9-19 percent, depending upon the type of surgery, drug combinations used, and type of subjects studied. *See*

Aboulesh and Taylor, 1976, Attachment 2; Wilson, *et al.*, 1969, Attachment 20, Kobielski, *et al.*, 1985, Attachment 13; Jastak and Marshall, 1984, Attachment 12; and Tucker, *et al.*, 1984, Attachment 19. Hallucination is an established side effect of nitrous oxide in the course of anesthesia or sedation. *See* Davidson and Kahn, 1985, Attachment 6; Brodsky and Zuniga, 1975, Attachment 5. Nitrous oxide was first synthesized in 1776, and since that time, has been abused for its psychedelic effects. *See* Hamburg, 1980, Attachment 8; Duncan and Moore, 1984, Attachment 7. It was estimated that up to 20 percent of dental and medical students in the United States used nitrous oxide "socially." *See* Rosenberg, *et al.*, 1979, Attachment 16.

8. Ms. Marks was administered a gas mixture containing 66 percent nitrous oxide continuously for one and one-half hours. Once the nitrous oxide is turned off, it doesn't immediately leave the body. Behavioral effects persist after nitrous oxide administration has ceased, even after brief exposure. *See* Moyes, *et al.*, 1979, Attachment 15. Ms. Marks was transferred to the recovery room about seven minutes after the nitrous oxide was turned off. Therefore, based on the pharmacokinetic properties and behavioral effects of this gas, the timing of Ms. Marks' dream in the recovery room is most plausible. A dose-response relationship between nitrous oxide concentrations (40-80 percent) and the occurrence of dreams was identified in normal volunteers. The concentration of nitrous oxide Ms. Marks received provoked dreams in 19-25 percent of the subjects studied. *See* Rosenberg, 1974, Attachment 17. Indeed, specific recommendations have

been made to dentists to keep nitrous oxide concentrations below 50 percent in order to avoid untoward psychic reactions. *See* Jastak and Malamed, 1984, Attachment 11.

9. Various psychologic factors seem to influence individual susceptibility, but in general, less emotionally stable individuals or individuals under stress tend to be more affected by exposure to gases that produce narcosis and cause hallucinations. See Duncan and Moore, 1984, Attachment 7; Hills and Ray, 1977, Attachment 9; Jastak and Malamed, 1980, Attachment 10; and Steinberg, 1956, Attachment 18. It has been recognized that certain patients' personality types can be expected to sexualize the relationship with the medical care provider. *See* Lambert, 1982, Attachment 14. One dentist concedes that teenage females under nitrous oxide have a propensity to have sexual aberrations. *See* Allen, 1979, Attachment 3. Further, individuals who repress sexual yearning will have greater propensity to release sexual fantasies under the effects of a disinhibiting drug. *See* Brahams, 1990, Attachment 4. Because of the incidence of sexually oriented hallucinations, it has been recommended to male dentists that they have a chaperone in the room when a young woman is administered nitrous oxide. *See* Jastak and Malamed, 1984, Attachment 11; and Lambert 1982, Attachment 14.

10. There is a paucity of case reports on the subject of sexual hallucinations in the professional literature. The very nature of human sexuality does not lend itself to widespread publication due to personal inhibitions of would-be authors. Nevertheless, existing case reports on

this issue suggest that this phenomenon is more prevalent than one would suspect. Further, it is reasonable to assume in our sexually oriented society, that some hallucinations are of an erotic nature. A survey of 50 female dental hygiene students administered nitrous oxide revealed that 18 percent expressed a feeling of sexual arousal or increased sexuality. *See* Jastak and Malamed, 1984, Attachment 11. Additional published anecdotes substantiate such occurrences: ". . . young, attractive female patient reported that breathing a 50 percent nitrous oxide-oxygen mixture was just like having sex!" *See* Jastak and Malamed, 1980, Attachment 10. Other case reports simply alluded to the sexual content of anesthesia-related dreams or hallucinations. *See* Kobielski, *et al.*, 1985, Attachment 13; and Jastak and Malamed, 1984, Attachment 11. A complete list of the articles I have cited herein is found in Attachment 21.

11. It is, therefore, absolutely reasonable that Ms. Marks' sexual sensations were the result of her being under the influence of nitrous oxide, a hallucinogenic drug that is known to cause such perceptions. Finally it is perplexing to me that in a case of one person's word against the other's, how the word of an individual under the influence of mind-altering drugs can even be considered against that of an individual with all faculties present.

Had I been afforded the opportunity by Captain Sanders' prior defense counsel to adequately research and prepare for my testimony in Captain Sanders' court-martial, and if I had been asked the question, "In your opinion, was Ms. Marks' perception that Captain Sanders touched her vagina a hallucination caused by the nitrous

oxide still in her system," I would have answered, "Absolutely."

/s/ Jill R. Keeler
JILL R. KEELER, LTC, AN

STATE OF MARYLAND, COUNTY OF HARFORD, ss:

BE IT REMEMBERED that on this 25th day of June, 1990, before me, a notary public in and for the county and state aforesaid, came JILL R. KEELER, satisfactorily proven to be the same person who executed the foregoing instrument and acknowledged execution of the same before me.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the date last above written.

/s/ Katherine A. Williams
Notary Public
Katherine A. Williams

My appointment expires June 1, 1995.

## CURRICULUM VITAE

NAME: Jill R. Keeler
SSN: 261-96-8756
GRADE: LTC
DOB: 22 January 1950
EAD: 22 August 1967
PRIMARY AOC: 66F9B

### EDUCATION

| School | Location | Degree | Year |
|---|---|---|---|
| **Civilian:** | | | |
| Uniformed Services University of Health Sciences | Bethesda, MD | Ph.D. | 1984 |
| University of Maryland (WRAIN) | Baltimore, MD | B.S.N. | 1971 |
| Palmetto Senior High School | Miami, FL | Diploma | 1967 |
| **Military:** | | | |
| Faculty Development Course, AHS | Fort Sam Houston, TX | | 1985 |
| AMEDD Officer Advanced Course | Correspondence | | 1980 |

| | | |
|---|---|---|
| Anesthesiology for ANC Officers Course, WRAMC | Washington, DC | 1975 |
| Officers Basic Course, MFSS | Fort Sam Houston, TX | 1971 |

## BOARD CERTIFICATION

| Organization | Year |
|---|---|
| Registered Nurse (Maryland) | 1971-Current |
| Certified Registered Nurse Anesthetist (Recertification expires 8-31-90) | 1975-Current |

## TEACHING APPOINTMENTS

| Academic Rank | Course Title/Institution/Location | Dates |
|---|---|---|
| Adjunct Associate Professor of Health Science | Pharmacology/Texas Wesleyan College/ AHS, FSH, TX | 1985-1987 |
| Adjunct Associate Professor | School of Nursing/University of Maryland/Baltimore, MD | 1990 |

## AFFILIATION AND PROFESSIONAL SOCIETY MEMBERSHIP

| Organization | Year |
|---|---|
| American Association of Nurse Anesthetics | 1975-Current |
| Maryland Association of Nurse Anesthetics | 1987-Current |
| Sigma Xi, The Scientific Research Society | 1987-Current |

## DECORATIONS AND AWARDS

**Military:**
Meritorious Service Medal
Army Commendation Medal with First Oak Leaf Cluster
Army Achievement Medal
Good Conduct Medal
National Defense Service Medal
Armed Forces Reserve Medal
Army Service Ribbon
Overseas Service Ribbon
Vietnam Campaign Medal
Vietnam Service Medal
Vietnam Gallantry Cross Unit Citation

**Civilian:**
Graduate Student mini grant award, U.S.U.H.S. (1982, 1983, 1984)
Outstanding Student Research Award, Society for Experimental Biology and Medicine, Washington, DC Section (1983)

## ARTICLES AND ABSTRACTS

Keeler, J.R. and Helke, C.I.: Evidence that a GABAergic mechanism at the ventral surface of the medulla influences blood pressure and heart rate in the rat. Neurosci. Abstracts 8:268, 1982.

Keeler, J.R. and Helke, C.J.: Studies on the cardiovascular effects produced by GABA at the ventral surface of the medulla oblongata in the rat. Proc. Physiol. Soc. New Zealand 3:31, 1983.

Keeler, J.R., Shults, C.W., Chase, T.N. and Helke, C.J.: Distribution of 3H-GABA applied topically to the ventral surface of the medulla oblongata in the rat. Neurosci. Abstracts 9:1159, 1983.

Keeler, J.R. Shults, C.W., Chase, T.N. and Helke, C.J.: The ventral surface of the medulla in the rat: pharmacologic

and autoradiographic localization of GABA-induced cardiovascular effects. Brain Res. 297:217-224, 1984.

Keeler, J.R. and Helke, C.J.: Pharmacologic evidence that substance P is involved in bulbospinal cardiovascular control in the rat. Neurosci. Abstracts 10:712, 1984.

Keeler, J.R. and Helke, C.J.: Spinal cord substance P mediates bicuculline-induced activation of cardiovascular responses from the ventral medulla. J. Autonom. Nerv. Syst. 13:19-33, 1985.

Keeler, J.R., Charlton, C.G. and Helke, C.J.: Cardiovascular effects of spinal cord substance P: studies with a stable receptor agonist. J. Pharmocol. Exp. Ther. 233:755-760, 1985.

Helke, C.J., Sayson, S.C., Keeler, J.R. and Charlton, C.G.: Evidence for bulbo-spinal thryotropin releasing hormone (TRH) projections: coexistence with serotonin. Fed. Proc. 44:1388, 1985.

Keeler, J.R. and Helke, C.J.: Cardiovascular effects mediated by intrathecal administration of a substance P agonist. Fed. Proc. 44:1734, 1985.

Helke, C.J., Charlton, C.G., and Keeler, J.R.: Bulbospinal substance P and sympathetic regulation of the cardiovascular system: a review. Peptides 6 (Suppl. 2):69-74, 1985.

Helke, C.J., Sayson, S.C., Keeler, J.R. and Charlton, C.G.: Thryotropin-releasing hormone-immunoreactive neurons project from the ventral medulla to the intermediolateral cell column: partial coexistence with serotonin. Brain Res. 381:1-7, 1986.

Keeler, J.R.: Interactions between nerve agent pretreatment and drugs commonly used in combat anesthesia. Military Medicine, in press, 1990.

Keeler, J.R., Hurt, H.H., Nold, J.B. and Lennox, W.J.: Estimation of the LCt50 of phosgene in sheep. Drug Chem. Toxicol., in press, 1990.

Keeler, J.R., Hurt, H.H., Nold, J.B., Corcoran, K.D. and Tezak-Reid, T.M.: Phosgene-induced lung injury in sheep. Inhalation Toxicol., in press, 1990.

**Research Interests**

Central control of the cardiovascular system, shock, hypertension, central control of ventilation, pain mechanisms, central effects of anesthetic agents, pulmonary edemagenic mechanisms.

## PROFESSIONAL EXPERIENCE

| Position | Location | Dates |
|---|---|---|
| Chief, Physiology Branch | U.S. Army Medical Research Institute of Chemical Defense Aberdeen Proving Ground, MD | Jan 1989 Present |
| Principal Investigator, Physiology Branch | U.S. Army Medical Research Institute of Chemical Defense Aberdeen Proving Ground, MD | Nov 1987 Jan 1989 |
| Instructor, Anesthesia Branch | Nursing Science Division Academy of Health Sciences Fort Sam Houston, TX | Feb 1985 Oct 1987 |
| Graduate Student (Pharmacology) | Uniformed Services University of Health Sciences, Bethesda, MD | Aug 1980 Jan 1985 |

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| Staff Anesthetist & Clinical Instructor | Madigan Army Medical Center Tacoma, WA | Mar 1977<br>Jul 1980 |
| Staff Anestetist [sic] | 121st Evacuation Hospital, Korea | Jan 1976<br>Feb 1977 |
| Student in Anesthesia Nursing (Phase II) | Walter Reed Army Hospital Center, Washington, DC | Jun 1974<br>Dec 1975 |
| Student in Anesthesia Nursing (Phase 1) | William Beaumont Army Medical Center, El Paso, TX | Nov 1973<br>May 1974 |
| Staff Nurse | Cutler Army Hospital Ft. Deven, MA | Mar 1973<br>Oct 1973 |
| Staff Nurse ICU | 3d Field Hospital, Vietnam | Oct 1972<br>Feb 1973 |
| Staff Nurse ICU | Fitzsimons Army Medical Center, Denver, CO | Aug 1971<br>Sep 1972 |

DEFENSE APPELLATE
EXHIBIT C

IRIGONEGARAY & ASSOCIATES
1535 S.W. 29th Street
Topeka, KS 66611-1901
(913) 267-6115

IN THE UNITED STATES ARMY COURT OF MILITARY REVIEW

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| **UNITED STATES**<br><br>v.<br><br>**Captain Myron Dean Sanders,** SSN 522-66-7098, U.S. Army, Headquarters and Headquarters Company & 16th Mobile Army Surgical Hospital, Fort Riley, Kansas 66442. | **AFFIDAVIT**<br><br>Case No. ACMR 89-02717<br><br>Trial at Patton Hall, Fort Riley, Kansas, on 30-31 August & 1st September, 1989, before a G.C.M. appointed by Commander, 1st Infantry Division (Mech) & Fort Riley. |

**LIEUTENANT COLONEL DALE A. DOUGLASS,** having been duly sworn upon his oath, states:

1. I am currently the Director of the U.S. Army/Texas Wesleyan University Phase II Program in Anesthesia Nursing at Darnall Army Community Hospital in Fort Hood, Texas. From February, 1985 to December, 1985, I, as the Assistant Director of the Nurse Anesthesia Program at Fort Hood, Texas, clinically supervised Captain

Sanders' final months of anesthesia education and training. I observed Captain Sanders dedicate long and difficult hours of study in order to successfully meet the scholastic standards required to obtain the 66F (Nurse Anesthesia) AOC and a Master of Science Degree from the State University of New York at Buffalo. In the operating room, Captain Sanders worked tirelessly in developing quality professional skills. On numerous occasions, patients and patient's relatives communicated to me their appreciation for the time and energy he spent with them before, during, and after the operation to assure optimal anesthesia/nursing care.

2. On the afternoon of 29 August 1989, I was contacted telephonically by the Judge Advocate, Criminal Law Division at Fort Riley, and asked to report to Fort Riley no later than 30 August 1989, in order to serve as a character and expert witness in Captain Sanders' defense. *See* Memorandum, Attachment 1. With little knowledge concerning the specifics of the case, and no time for formal preparation, I packed that evening and boarded a plane for Kansas the next morning. At that time, I was concerned about the appropriateness of such late notification to participate in such a critical matter involving a service member. In astonishment over the panel's decision, I have considered my earlier concerns and now feel that my late notification may have been a symptom of a hasty and ill-prepared defense of Captain Sanders.

3. During my 12 years of anesthesia experience, I have, on occasions, noticed, or have been informed of, bizarre happenings and/or dreams (some of a sexual nature) that occurred during or after an anesthetic. While in training at Walter Reed Army Medical Center, I recall a

lady telling me that she had seen naked men walking up and down the ward during the evening after her operation. Her anesthesia had included the use of Innovar (a combination of droperidol and fentanyl) and nitrous oxide. On rare occasions (possibly once a month at our hospital), male patients experience erections during light stages of anesthesia, usually during the start or end of anesthesia procedure, most of which involve the use of nitrous oxide.

4. After Captain Sanders retained new counsel, I was asked to research each of the agents used by Captain Sanders to determine their propensity to cause sexual hallucinations. My research has shown that the use of Inapsine (droperidol) in combination with narcotics such as Sublimaze (fentanyl) has a documented adverse reaction of "emergence delirium" and "postoperative hallucinatory episodes." *See* Physicians Desk Reference, Attachment 2, p. 1086. The use of narcotics with nitrous oxide is known to produce euphoria and loss of inhibitions. It is unfortunate that these side effects are not predictable; however, the side effects are so rare as not to preclude the use of such drugs in the safe and proper anesthesia care of surgical patients.

5. If I had been asked the following question, "In your opinion, was Ms. Marks' perception that Captain Sanders touched her vagina a hallucination caused by the nitrous oxide still in her system," I would have answered as follows: "It is my opinion that Ms. Marks' perception that Captain Sanders touched her vagina was a post-operative hallucination, a result of the unfortunate side

effects of either Inapsine and Sublimaze or nitrous oxide, or a combination of any or all of the three agents."

/s/ Dale A. Douglass
LIEUTENANT COLONEL
DALE A. DOUGLASS

STATE OF TEXAS, COUNTY OF BELL, ss:

**BE IT REMEMBERED** that on this 25th day of June, 1990, before me, a notary public in and for the county and state aforesaid, came LIEUTENANT COLONEL DALE A. DOUGLASS, who is personally known to me to be the same person who executed the foregoing instrument and acknowledged execution of the same before me.

**IN WITNESS WHEREOF,** I have hereunto set my hand and seal on the date last above written.

/s/ Paul C. Mize
Notary Public

My appointment expires (Seal) Paul C. Mize
MY COMMISSION EXPIRES
June 9, 1993

DEFENSE APPELLATE
EXHIBIT D

IRIGONEGARAY & ASSOCIATES
1535 S.W. 29th Street
Topeka, KS 66611-1901
(913) 267-6115

UNITED STATES ARMY COURT OF MILITARY REVIEW
5611 Columbia Pike
Falls Church, Virginia 22041-5013

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| **UNITED STATES** | ) | |
| | ) | |
| v. | ) | ACMR 89-02717 |
| **CPT Myron D. Sanders,** | ) | |
| 522-66-7098 | ) | |

## AFFIDAVIT

**DR. JOHN R. LYONS,** having been duly sworn upon his oath, states:

1. I am a veterinarian in Manhattan, Kansas, with a clinical practice called Candlewood Veterinary Clinic, at 3262 Kimball Avenue. I have a B.S. degree in Animal Science from Ohio State University, and a Doctor of Veterinary Medicine (D.V.M.) degree from Kansas State University. My graduate degree training included some course work in anesthesiology.

2. I had an unsettling experience while under the influence of nitrous/oxygen anesthetic for a minor dental procedure. This occurred approximately two years ago in Madison, Ohio, in the office of Dr. Tom Applefeller, D.D.S. Dr. Applefeller is a friend of mine. I was given no medication other than nitrous oxide administered by a

female dental technician. After several minutes of breathing the anesthetic with the technician seated beside me, speaking in a friendly manner, I started to believe that she was making sexual advances toward me. I was very nervous and I felt the sensation of her touching the inside of my upper left thigh. All the while she was talking, I was certain that she was trying to stimulate me sexually and I was very mentally excited.

3. At this time, Dr. Applefeller came into the operating room, injected the local anesthetic, turned off the nitrous oxide and left. During the next several minutes as the effects of the anesthetic left me, I realized that Dr. Applefeller was seated several feet from me working on a second patient, as he had been for my entire visit. As the technician continued talking, I realized that she had not changed her conversation pattern at all.

4. I later realized that I had been totally confused about the situation. With Dr. Applefeller and a second patient seated that close to me, he would have been aware of any improprieties and would not have tolerated any of the actions that I was convinced had happened.

5. After the fact, with a clear head, I am convinced that nothing happened to me while under anesthetic, even though I was certain at the time that advances were being made. If I were asked today if I were *absolutely* certain that nothing happened during anesthesia, I would respond as follows: reason tells me that with Dr. Applefeller present nothing happened, but in my mind's confused state, I could not be certain.

6. By definition, anesthetic causes a loss of sensation and perception. I defy anyone, myself included, to be

absolutely certain what has taken place while he or she was under the effects of anesthesia.

7. I was asked by Captain Sanders' defense counsel to testify at his court-martial. I made plans to testify and cleared my appointment books for the three days of August 30, 31, and September 1, 1989. I had obtained directions for my trip to Fort Riley and knew how to find the building where the court-martial was to be held. I even had my suit with me at the clinic so that I could change clothes and leave for Fort Riley once I heard from the defense counsel that they were ready for me to testify. On or about the 30th day of August, 1989, I received a telephone call from Captain Bourne, the court-martial prosecutor. Captain Bourne informed me that the defense counsel would not be calling me as a live witness, but would present my experience through one of their expert witnesses. In other words, one of their experts would testify as to my experience. I felt very uncomfortable with this, and called Major Nockelby to verify this information. He told me that Captain Bourne's message was indeed true. Therefore, although I was ready, willing and able to testify at the court-martial hearing of Captain Myron Dean Sanders, I was not called as a live witness.

/s/ Dr. John R. Lyons
DR. JOHN R. LYONS

STATE OF Kansas, COUNTY OF Kiley, ss:

**BE IT REMEMBERED** that on this 30th day of May, 1990, before me, a notary public in and for the county and state aforesaid, came DR. JOHN R. LYONS, who is personally known to me to be the same person who executed

the foregoing instrument and acknowledged execution of the same before me.

**IN WITNESS WHEREOF,** I have hereunto set my hand and seal on the date last above written.

/s/ Patricia A. Underwood
Notary Public

My Appointment expires April 25, 1992.

**DEFENSE APPELLATE EXHIBIT G**

MEDICAL TREATISES

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IN THE UNITED STATES ARMY COURT OF MILITARY REVIEW

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| UNITED STATES OF AMERICA, | Appellee, |
| VS. | Case No. ACMR 89-02717 |
| CAPTAIN MYRON DEAN SANDERS, | Appellant. |

AFFIDAVIT

I, BRUCE C. BARRY, Trial Civilian Defense Counsel for Captain Myron Dean Sanders, first being duly sworn depose and state as follows:

1. I was the civilian defense counsel for Captain Myron Dean Sanders, participating in the trial of CPT Sanders from 30 August 1989 through 1 September 1989 in a General Court-Martial convened by Headquarters, 1st Infantry Division (MECH) and Fort Riley, at Fort Riley, Kansas. I was retained as a civilian defense counsel after the conclusion of the investigation conducted pursuant to Article 32(b) of the Uniform Code of Military Justice on the 10th day of July, 1990. At all times subsequent to my retention by CPT Myron Sanders, I, consistent with my professional schedule, diligently prepared for the trial of CPT Sanders with my co-counsel, MAJ Brian E. Nockleby and CPT Daniel Rottinghaus, both of the United States Army Trial Defense Service, Fort Riley, Kansas.

2. During the course of trial preparations, I had occasion to have numerous meetings with both my client, CPT Sanders and MAJ Brian Nockleby. At many of these meetings, the other co-counsel, CPT Daniel Rottinghaus, was also present. In several of these meetings, there were

extensive discussions of the various drugs used by CPT Sanders on Marybeth Marks. CPT Sanders, drawing on his background, education, and professional expertise as a nurse anesthetist, briefed us on the effects, and possible hallucinogenic effects of the various drugs which he administered to Marybeth Marks on the 12th day of May, 1989. I emphasized to CPT Sanders that he was a vital part of his defense, and we discussed the very critical roles he would perform in preparing for trial. It was emphasized to CPT Sanders the importance of researching the possible hallucinogenic or mind-altering effects of all drugs administered by CPT Sanders to Marybeth Marks. CPT Sanders indicated that, since he had been relieved of his nurse anesthetist duties pending results of his court-martial he would have more than ample time and certainly have the background to conduct this medical research. Additionally, I knew that CPT Sanders would be in constant communication with supervising nurse anesthetists within the Army Nursing Corps. Additionally, MAJ Brian Nockleby was to work with LTC Michael Troop, one of our expert witnesses; to determine his possible knowledge on the hallucinogenic or mind-altering effect of any of the drugs administered by CPT Sanders. I assumed the responsibility for working with LTC Jill Keller and for insuring that she had the relevant records on CPT Sanders' case and the appropriate medical records of Marybeth Marks in her possession prior to her departure from Maryland for participation in the court-martial. I also had the direct responsibility for questioning and preparing LTC Jill Keeler for her testimony, which was given on the 31st day of August, 1989. Pursuant to military orders, she arrived in the Fort Riley area

on 30 August 1989, and I spent several hours questioning her on the effects of the various drugs given to Marybeth Marks and preparing her for her testimony to be given the following day.

3. LTC Jill Keeler of the United States Army medical Research Institute of Chemical Defense did testify as an expert witness for the defense. LTC Keeler, a licensed nurse anesthetist with a doctorate degree in pharmacology, testified at length as to the pharamological properties of all the drugs administered by CPT Saunders to Marybeth Marks, including the drug of nitrous oxide, and testified to the effects that these various drugs, either singularly or in combination with one another, could have had on Marybeth Marks. Although LTC Keeler was very reluctant to adopt the term "hallucinations" for those experiences testified to by Marybeth Marks, she testified very credibly as to the possible influences that the various drugs could have had on Marybeth Marks, which would have caused her to actually believe that the experiences she described were real when in fact such experiences may not actually have occurred. Indeed, she testified from her memory of Marybeth's medical records, which she had reviewed, as to all the drugs that had been administered by CPT Sanders to Marybeth Marks (R 562). At no point during the preparation for her testimony in the evening of 30 August 1989 or prior to or during her testimony of 31 August 1989 did LTC Jill Keeler ever indicate any need for additional time to review the medical records or for additional time to do further research on the administered drugs. She testified professionally and competently, and I am convinced that her testimony was well-received by members of the Court.

4. In documentation recently received by this counsel, LTC Jill Keeler now remembers that she had only two "working days" to review the documentation sent to her by the defense counsels prior to her departing for the trial at Fort Riley, Kansas. MAJ Brian Nockleby remembers talking with LTC Keeler on the 15th or 16th of August, 1989 and discussing the case, including the drugs administered to Marybeth Marks, with her during that conversation. I also had a similar conversation with LTC Keeler on either the 17th or 18th day of August, 1989. On the 18th day of August, a complete package of all relevant materials, including all medical records of Marybeth Marks then in the possession of the defense, was sent to LTC Keeler by express mail/next-day service at her temporary address at the Sheraton Boston Prudential Center in Boston, Massachusetts. (Attached hereto and labeled as "Exhibit A" is the express mail receipt for that package of material sent by express mail of the United States Postal Service on the 18th day of August, 1989). An additional conversation between myself and LTC Keeler, occurring after her return to her duty station at Aberdeen Proving Grounds, indicated that she had received the materials on about the 19th of August but had not had sufficient time to review the materials. She indicated to me, at that time, that there was no reason for concern and that she had ample time to review the materials, which had been sent her, and do any research which she felt may have been necessary on the drugs that had been administered. I have reviewed the Affidavit of LTC Jill R. Keeler and am somewhat puzzled by her present claim that she was not afforded sufficient opportunity by myself and MAJ Nockleby to adequately research the pharmacological

properties and possible hallucinogenic side-effects of the drug nitrous oxide. LTC Jill Keeler was most certainly afforded an adequate opportunity to prepare for her testimony in the trial of the *United States v. Myron D. Sanders.* Her testimony was professional, credible, and well-received by members of the court-martial panel.

5. It has been implied by CPT Sanders that his defense was "hastily" prepared. Such was not the case. MAJ Nockleby, CPT Rottinghaus, and I worked diligently and professionally in preparing the defense of Myron Sanders. It is partially true that there was a flurry of activity immediately preceding the trial: This is fairly common in the preparation of criminal trials. In addition to the coordination with LTC Keeler, I prepared for other possible defenses to be raised during the course of the trial, including coordination with a former Army psychologist, Thomas Coleman. A battery of tests was administered to CPT Sanders. After an evaluation of those tests by Dr. Coleman, Dr. Coleman and I concluded that my proposal to use Dr. Coleman as an expert witness for CPT Sanders would most probably result in evidence to the detriment of CPT Sanders being presented. Additionally, in preparation for the trial, all potential witnesses were interviewed, but many of these, of course, were not ultimately called to testify.

6. CPT Sanders makes much of the fact that a local veterinarian was not called personally to testify as to certain experiences which he perceived while he was under the effects of nitrous oxide at his dentist. The tactical decision was made that to call this local veterinarian would make it appear as though CPT Sanders was "grasping at straws."

7. Additionally, CPT Sanders alleges some lack of preparation in that we did not use a video tape, which we made of the 5th floor recovery area of Irwin Army Hospital. After reviewing this video tape, counsel realized that the tape not only clearly showed a physical layout which would have possibly enabled CPT Sanders to inappropriately touch Marybeth Marks without fear of being discovered, but the video tape clearly showed the physical placement of certain items within the recovery room, which would have tended to add credibility to the limited memory of the victim, Marybeth Marks. Accordingly, this video tape was not utilized, and I believe the decision not to utilize this tape was the correct one.

8. I believed that I was fully prepared to defend CPT Myron D. Sanders in a professional manner on the trial that occurred from 30 August to 1 September 1989. I did not expect to lose that case, and, accordingly, I have spent numerous hours discussing our loss with other members of the bar and those military counsel who had occasion to witness parts of the trial. After reflecting upon the trial and reviewing with my colleagues and other members of the bar all aspects of the trial, I have concluded that the trial came down to the issue of the credibility of Myron Dean Sanders vs. the credibility of Marybeth Marks. I honestly believe that the court members, after hearing all of the evidence and scrutinizing the demeanors of both Marybeth Marks and of the accused, found the testimony of Marybeth Marks to be credible and very believable.

FURTHER AFFIANT SAITH NAUGHT.

/s/ Bruce C. Barry
BRUCE C. BARRY

STATE OF KANSAS, COUNTY OF GEARY, ss:

Subscribed and sworn to before me this 25th day of January, 1991, by BRUCE C. BARRY.

/s/ Phyllis Baker
PHYLLIS BAKER
Notary Public
My Appt. Expires: 12/13/91

[SEAL]

---

AFFIDAVIT

MAJOR Brian E. Nockleby, 516-50-6837, Senior Defense Counsel, HHC, USAG, Ft. Riley, Kansas, 66442, being duly sworn below, states as follows:

In response to CPT Sanders' allegations of ineffectiveness, I would generally note that the defense was not hastily prepared. In this regard, we spent considerable effort preparing for the Article 32 hearing and continued to work consistently toward trial after the Article 32. Further, the possibility of hallucinogenic effects of nitrous oxide occurred to us early in preparation. There is such evidence of record. Although we did not introduce articles on nitrous oxide, we did not, for tactical reasons, introduce articles on any drug.

I now respond to specifics.

1. We discussed the effects of all of the drugs including nitrous oxide with all of our experts including LTC Keeler, LTC Troup, MAJ Duncan, and CPT Sanders. We relied upon our experts to conduct a literature search, and CPT Sanders agreed that that was appropriate. CPT Sanders stated to me at an early meeting that he would assume responsibility for medical research. Early in preparation for trial he was able to find articles on hallucinogenic effects of fentanol and droperiodol, but told us he could find nothing on nitrous oxide after an extensive effort.

1. We presented all the evidence we had on the effects of nitrous oxide. We decided for tactical reasons not to call

Dr. Lyons, a local veterinarian. The substance of his testimony was effectively presented by Dr. Keeler (R 546-548, 562, 592-599).

3. I filmed the operating suite on the fifth floor of the hospital. We did not present this evidence for tactical reasons. The film actually helps the prosecution as much as it helps the defense. Among other things, the film shows a long hallway from the waiting room to the recovery room which indicates relative isolation. It shows that Marybeth was essentially correct in her recall of recovery room furniture.

4. Based on our initial discussion with CPT Sanders in early July about potential witnesses, I gained the impression that MAJ Douglas was primarily a character or duty-performance witness. We did not originally intend to call him as an expert in anesthesia. CPT Rottinghaus was assigned to interview him. CPT Sanders gave CPT Rottinghaus an incorrect telephone number which caused delay in contacting him. If CPT Sanders contacted MAJ Douglas one week before trial, he certainly did not do so on the number he gave us. Curiously, MAJ Duncan makes no mention of a call from CPT Sanders. We contacted MAJ Douglas as soon as we obtained his correct assignment and phone number. We were able to use him as an expert in anesthesia. We did not ask him to research medical literature on nitrous oxide because we believed a search would be fruitless after CPT Sanders' effort.

5. We spent many hours with CPT Sanders, LTC Keeler, and MAJ Duncan on 29 and 30 August preparing their testimony. We felt prepared and comfortable with their

testimony. None of our witnesses complained about lack of preparation at the time.

6. CPT Sanders complains that we did not discover Susanne Eyeman, a civilian psychologist. We did request in discovery "the names of all potential witnesses along with their present addresses and telephone numbers." Trial counsel responded that he would provide a witness list. Her name did not appear on any prosecution list. Since he called her in rebuttal, he would probably say he satisfied discovery. In any event, Ms. Eyeman did not refer to records but testified from memory. At the time, we considered whether to move for production of the records. We did not think that Ms. Eyeman was very helpful to the prosecution, particularly in light of Dr. Showalter's testimony. It was our judgment that further discovery would not be productive.

7. CPT Sanders is probably correct in his statement that there was a flurry of activity 21-29 August in preparation. In fact, we also were busy at the time of the Article 32 in June and we were active on his case in the interim. I do not think it is productive to interview witnesses far in advance of trial; witnesses get "cold" and have to be reinterviewed. In this case, we interviewed our witnesses at the appropriate time.

8. LTC Keeler says that she was not contacted until the week before trial. This is not correct, because I am sure that I called her on 15 or 16 August from Charlottesville. I explained the issues, the date of trial, and we discussed her schedule. Mr. Barry called her later and sent her the necessary documents.

I state nothing further.

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# Sexual phenomena hypnosis and nitrous oxide sedation

**Colin Lambert**, BDS, MDS

***The dentist who uses nitrous oxide sedation should be familiar with the characteristics of hypnotic behavior. A patient can enter the hypnotic state spontaneously and unintentionally, even more so under nitrous oxide, and can hallucinate sexual phenomena. Knowledge of hypnosis and the presence of a third person in the operatory during treatment can minimize the consequences of this phenomenon.***

This article was prompted by an article by Jastak and Malamed,[1] who reported several cases of alleged sexual molestation of patients by dentists during treatment with nitrous oxide sedation. Medicolegal defense was complicated by the absence of a third party in the dental office during the alleged misconduct. Either the dentists were acting unprofessionally or the patients were hallucinating the experience.

These authors[1] reviewed the literature on hallucinations with nitrous oxide and suggested that practitioners have a third person present when treating patients with nitrous oxide. They also recommended using nitrous oxide at a level below 50% as hallucinations were more frequent above this percentage. Bennett[2] commented that, in his experience, patients do not hallucinate sexual experiences under nitrous oxide sedation; he said that a dental literature search offered no support for the sexual hallucination theory.

I have reviewed the literature on hypnosis to provide a different perspective on the hallucinatory theory. Hypnosis was accepted as a legitimate treatment method in 1958 in a policy statement from the American Medical Association.[3]

The mode of action of hypnosis is unknown; however, it is accepted that the patient is not asleep, is aware of the environment, is more suggestible, and has attention or concentration focused on a thought or idea that can be sexual in nature. A patient may lapse into hypnosis spontaneously and unintentionally without direction from another person or may be guided into hypnosis by another for ease of treatment. Intentional or unintentional hypnosis is facilitated by tranquilizers, including nitrous oxide. This was observed by Colton[4] and Bingham[5] and more recently by Barber and others.[6] Whether a patient enters hypnosis under direction or spontaneously, hallucinations, another characteristic of hypnosis, can occur, especially with the use of sedatives that potentiate hypnosis.

**Background**

Davy, in the 18th century, was the first to suggest that nitrous oxide may be useful as an anesthetic agent. He and his colleagues noted their subjective thoughts while breathing nitrous oxide: "Vivid ideas pass readily through the mind while breathing nitrous oxide."[7] Coleridge[8] wrote after his first inhalation: "I experienced the most voluptuous sensations and had the most entrancing visions."

Hallucinations may occur spontaneously in hypnotized patients. According to Wolberg,[9] the patient may regard the hypnotic experience as a seduction and have vivid sexual fantasies concerning the hypnotist. The fantasies depend on the meaning of hypnosis to the subject and on the patient's attitude in symbolizing these experiences. There may be fantasies of being reborn, being fed, sexually stimulated, injured, or destroyed.[9] Kroger[10] believed that spontaneous hypnotic amnesia can develop in a female patient who may claim that the physician has raped her.

Mears[11] noted that the hypnotized subject may experience hallucinatory phenomena that occur spontaneously. The hallucinations are most commonly visual and less commonly auditory, olfactory, gustatory, or tactile. These reports referred to cases of induced hypnosis.

In view of the foregoing comments, the subjective reports of the patients reported by Jastak and Malamed[1] are of interest in the context of hypnosis. The statements included: "felt a hand touching her;" "She was unable to visually confirm the sensation;" "The patient described a 'dream' after the treatment;" "Patient reported an unusual sensation . . . it might have been a fantasy;" "She described the sensation of being naked."

The fact that a third person is present may be meaningless to a patient who is convinced that improper conduct has occurred. Cheek and LeCron[12] reported an instance in which a woman received dental treatment with hypnosis sedation and was accompanied at all times by her husband during treatment. The woman failed to attend her next appointment. The husband said that his

wife believed the dentist had made sexual advances to her during hypnosis. The husband knew this to be untrue as the dentist had never been alone with his wife. The patient refused to return for further treatment.

**Recommendations**

Although medical hypnotists agree that a third person should be present during hypnosis, the patient may still be convinced that she has been molested.[12]

Mears[11] states that the rapport of the hypnotic situation greatly increases the patient's awareness of all the details of the therapists's behavior, both verbal and nonverbal.[11] The implication of all this for the dental practitioner is that careful use of words and appropriate professional attire and behavior will help minimize suggestions of a nature that may induce sexual hallucination in the patient under nitrous oxide sedation.

Appropriate visual images should be suggested to the patient. Encouraging the patient "to think about or imagine something pleasant" may be inadvisable as this encourages the patient to imagine situations that could be inappropriate in the dental office. Patients' thoughts are best directed to those of a more acceptable nature, for example, relaxing at the seaside.

Certain personality types can be expected to sexualize the relationship with the dentist and, if recognized, more care should be taken. Gordon[13] stated that hysteric personalities are sexualized; characteristics can include coquetry in women and softness and effeminacy in men.

They are prone to imaginativeness and it is not uncommon that this group of patients, when they believe they have been dealt with badly, turn to litigation.[13]

Also of note is that individuals subject to hysterical symptoms are usually easy to hypnotize.[14] Alarcon[15] stressed the seductive form of interpersonal behavior of hysterical patients and noted their tendency to suggestibility and auto-suggestion. Luisada and Peele[16] reported the characteristics of male hysterical patients and noted effeminate and overly masculine characteristics and a tendency for alcohol abuse. Schmidt and Messner[17] state that the female patient with a hysterical personality disorder can be a problem patient in family practice.

Other authors[9,10,12] support Jastak and Malamed[1] in stating that a third person should be present in the surgery during treatment with nitrous oxide. This action will minimize legal problems. Wolberg[9] observed that hypnotists have advocated the presence of a third person during treatment to avoid legal entanglements; Kroger[10] stated that certain dangers, such as a charge of unethical conduct, can be obviated if a third party such as a nurse is present. Cheek and LeCron[12] said that, although it is not feasible for a psychotherapist to have someone else present, others should take the precaution of having the door open and someone nearby.

Allen[18] believes that a female chaperone is essential in an office in which nitrous oxide conscious sedation is administered. In his experience, young teenage females often have hysterical symptoms and some females under

nitrous oxide have a propensity to have sexual aberrations. This also applies under hypnosis as noted previously.[9,11]

**Conclusions**

The dental practitioner should never underestimate his or her influence on patients, especially those under sedation by tranquilizing drugs like nitrous oxide that potentiate induced and autohypnosis and thereby hypnotic phenomena like sexual hallucination. Prevention is facilitated by knowledge of, and experience with, the principles of hypnosis. If a patient's sexual hallucinations are not prevented, a dental assistant present during treatment will reduce legal complications of the patient's experience.

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LOGO ARTICLES

# Nitrous oxide sedation and sexual phenomena

**J. Theodore Jastak,** DDS. PhD
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***Nine cases of sexual phenomena that occurred with use of nitrous oxide and oxygen sedation are described. Dentists involved routinely used concentrations of nitrous oxide greater that*** [sic] ***50% and did not have assistants in the room during dental procedures. Recommendations on the concentrations of nitrous oxide and the presence of an assistant are made.***

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Various side effects have been reported with the use of nitrous oxide. Most common are nausea and vomiting, but instances of dysphoria, claustrophobia, apprehension, and hallucinations have also been described.[1,2] Although serious side effects are rarely seen with use of nitrous oxide as a sedative agent when used in concentrations of 50% or less, when concentrations of 70% to 80% are used, untoward reactions seem much more common.

Recently, a number of situations have occurred in which a male dentist has been accused of sexually assaulting a female patient who received nitrous oxide sedation. In several instances, the accusations have involved complaints to law enforcement agencies and potential criminal prosecution. Most have involved formal hearings before state dental boards with consideration of loss of professional licensure.

As this represents a serious problem for the clinician who administers nitrous oxide, the conditions surrounding these cases are reported here. For obvious reasons, certain information that would permit identification of either patient or clinician has been omitted, and the outcome of each case has been discussed separately to further protect the persons involved. Moreover, the type of phenomenon involved has been listed as visual, tactile, or auditory. The method of identification encompasses a variety of patient descriptions (Table 1). However, rape was considered possible in only one case but was medically disproved.

**CASE 1.** A 28-year-old healthy woman had a chipped tooth restored while under regional anesthesia and nitrous oxide sedation. The patient claimed that no one else was in the dental office during treatment. She reported that she received too much nitrous oxide and fell asleep. Subsequently, she described a frightening visual effect. After recovery, the patient left the dental office and, after talking about the incident to a friend, reported it to the authorities.

**CASE 2.** A 28-year-old healthy woman was treated for a periapical abscess by a general practitioner. Treatment included a single extraction; both regional anesthesia and nitrous oxide sedation were used. Complications or side effects were not reported, and recovery from both the surgery and anesthesia was uncomplicated. Several follow-up appointments were made for periodontal therapy. At one of these appointments, during a short time, when the dental assistant reportedly left the room, the patient said she felt a hand touching her. However, she was unable to visually confirm the sensation. After the dental

treatment was completed, the patient scheduled an appointment for further treatment. However, she later canceled the appointment by phone.

**CASE 3.** A 15-year-old healthy girl having endodontic and restorative therapy received both a regional anesthetic and nitrous oxide sedation. Complications or abnormal behavior were not evident during treatment. However, after treatment, she described a "dream" to her sister. A dental assistant was not present in the office during this time; however, the patient's sister was seated in a neighboring operatory awaiting treatment. The patient's dental records indicate that she received 66% nitrous oxide followed by 100% oxygen for 15 minutes at the end of the dental procedure.

**CASE 4.** A 15-year-old girl had restorative dentistry while under nitrous oxide sedation. Unusual incidents were not reported until after dental treatment, when the patient spoke to her sister and reported an unusual euphoric state of being aware of her surroundings but unable to move. The treatment record indicates the patient received 66% nitrous oxide. She received 100% oxygen for less than three minutes and had to be assisted from the office by her mother and sister because she had difficulty walking by herself after treatment.

**CASE 5.** A young woman was seen by a general practitioner for placement of a crown. The patient had difficulty in making appointments, and finally, out of frustration, the dentist agreed to see her after regular office hours. The patient was an epileptic who required phenytoin (Dilantin) for control of seizures. During the

**Table 1** – Summary of information on nine cases of sexual phenomena.

| Case | Age | Procedure | %$N_2O$ | Type of phenomenon | Patient comments | Other |
|---|---|---|---|---|---|---|
| 1 | 28 | Restorative | Unreported | Visual* | Fell asleep | . . . |
| 2 | 28 | Surgery and periodontal | 50 | Tactile† | . . . | Multiple appointments before occurrence |
| 3 | 15 | Endodontic and restorative | 66 | Tactile | "Dream" state | . . . |
| 4 | 15 | Restorative | 66 | Tactile and visual | Euphoric state: unable to move | . . . |
| 5 | Unreported | Crown and fixed partial denture | Unreported | Tactile | Fell asleep | After regular hours |
| 6 | 29 | Endodontic | 66 | Tactile | "Fantasy" | Numerous prior appointments |
| 7 | 31 | Diet analysis | 50 to 80 | Tactile | Became unconscious | . . . |
| 8 | 28 | Endodontic | 60 | Tactile and visual | . . . | Multiple visits with similar phenomena |
| 9 | 33 | Restorative | 70 | Tactile and auditory‡ | . . . | . . . |

*Dentist reportedly attempted to see patient's breast or pelvic area.
†Dentist reportedly attempted to fondle patient's breast or pelvic area.
‡Suggestive commands were reportedly made.

appointment, she received lidocaine for oral regional anesthesia and nitrous oxide for sedation. She said she fell asleep twice during the appointment and awoke when she was stimulated sexually. She experienced mild dizziness and slight amnesia for a few hours after sedation but otherwise recovered normally. She did not return to the dentist for further care although she did not mention the incident to the dentist at the time of discharge.

**CASE 6.** A 29-year-old healthy woman had seen the same dentist for more than nine years and had received nitrous oxide sedation without incident on many occasions during two years. While being endodontically treated and under nitrous oxide sedation and regional anesthesia, the patient reported an unusual sensation. Although alarmed, the patient later said, "It might have been a fantasy." The incident was described to a family member who suggested that it be reported to authorities. The patient's records indicate she received 66% nitrous oxide on this and on several other occasions. An assistant was not present in the operatory during treatment.

**CASE 7.** A 31-year-old woman was seen by a general dentist for diet analysis after routine office hours. Nitrous oxide sedation was used to determine its effect on a lingually administered colorometric vitamin test. The patient reported periods of partial lucidity that alternated with sleep. She described the sensation of being naked. When she left the office, she did not mention any side effects to the dentist.

**CASE 8.** A 28-year-old healthy woman had been undergoing endodontic treatment for several months. She usually received a local anesthetic and nitrous oxide sedation. On several occasions, the patient described her reaction to nitrous oxide as "being extremely groggy afterwards." The patient's records indicate she received approximately 60% nitrous oxide. On the 5th, 6th, and 7th treatments using nitrous oxide, she also reported unusual dreams. Immediately after these occurrences, the patient did not say anything to the dentist because, "I kept putting it out of my mind, that it didn't really happen and kept trying to convince myself it was only the influence of the gas making me think it did." The patient returned for additional dental treatment and received nitrous oxide without further incidents.

**CASE 9.** An indigent female patient was given free restorative treatments either before or after routine office hours as a charitable gesture. Because of an unusual degree of apprehension to dental treatment, the dentist usually needed to preoperatively give diazepam orally followed by nitrous oxide sedation and local anesthetic. On one occasion, the patient did not take diazepam before the dental appointment and 70% nitrous oxide was required for adequate sedation. She described being drowsy but was still aware of an unusual effect. After recovering from sedation, she mentioned she would call the dentist for a follow-up appointment, and she left the office without any discussion of the experience.

All the foregoing cases were reviewed by state dental boards. In five instances, district attorneys were involved in preliminary criminal investigations, and one complaint resulted in a secret hearing by a grand jury.

Only one of the criminal investigations resulted in a jury trial; the dentist was acquitted of all charges. In all other cases, and for various reasons, criminal charges were ultimately dismissed. However, hearings by a state dental board can be another matter. In one instance, the practitioner's license was revoked for approximately a year and was only reinstated with restrictions. In another instance, a formal reprimand was issued. Most of the remaining cases were dismissed after a formal hearing or dropped because of insufficient evidence.

**Discussion**

Several features are common to all the presented cases. All the complaints were from young women and involved male dentists. None of the patients discussed the experience with the dentist after recovery from sedation and, in fact, there were indications some of the women may have even carried on a normal discourse before leaving the office. Many of the women commented on how shocked or stunned they were, and three patients specifically mentioned they were unable to think clearly until the next day. Formal complaints to either a law enforcement agency or to a state board never occurred until either family members or friends were told of the experience and advice was sought as to how to proceed. In this regard, there was circumstantial evidence that other women had also reported sexual experiences while under nitrous oxide sedation but were unwilling to be identified or to press formal complaints, perhaps because of embarrassment. It is interesting that few of the women were able to visually corroborate the experiences, and in fact, one patient specifically said she was afraid (or unable?) to

open her eyes. No patient gave any obvious indication of distress during dental treatment, but most spontaneously mentioned they were frightened by the experience. The key factor that allowed all of the cases to be seriously considered by either law enforcement agencies or by peer review was the absence of a dental assistant or other personnel in the facility at the time of the perceived occurrence. This factor limited the effectiveness of both formal legal defense or a professional consultant's help despite the accused dentist's excellence of prior professional service, ethical and moral standing in the community or church, and the known hallucinogenic properties of nitrous oxide.[1,3-6]

The true incidence of hallucinations during the clinical use of nitrous oxide sedation is unknown. A previous study reported three in more than 1,000 cases in which nitrous oxide sedation was administered during dental care[1] – clearly a small percentage. However, that study reported most sedations required less than 50% nitrous oxide. Various neuropsychiatric responses have been described in patients receiving nitrous oxide, usually in concentrations greater than 50%. The early literature on anesthesia[2,3] specifically mentioned catalepsy, mania, delirium, transient blindness, and various other neurologic abnormalities as side effects of nitrous oxide anesthesia. More recently, Bergstrom and Bernstein[7] described psychotic and fear responses in women who were given 80% nitrous oxide for caesarean section. Brodsky and Zuniga[8] described a case in which a dentist who regularly self-abused nitrous oxide required psychiatric treatment for paranoid ideation and outright visual hallucinations. Studies done on healthy young volunteers who were

exposed to concentrations of nitrous oxide that varied from 40% to 80% indicated frequent occurrence of paranoid ideas, auditory and visual hallucinations, panic, anger, and emotionally oriented kaleidoscopic dreams (Table 2).[4,5] Interestingly, women seemed to be more often disturbed by such occurrences than men, but environment and emotional state were also considered important factors

Table 2 – Effect of nitrous oxide inhalation on various sensory experiences (modified from Rosenberg[5]).

| $N_2O$ concentrations (%) | Percent occurrence in volunteers | | |
|---|---|---|---|
| | Light phenomena | Color visions | Dreams |
| 40 | 4 | 2 | 2 |
| 50 | 0 | 1.5 | 5 |
| 60 | 7.5 | 11.5 | 19 |
| 70 | 3.5 | 12.5 | 25 |
| 80 | 5 | 6.5 | 29 |

influencing the side effects reported.[5] Steinberg,[6] in a study of 50 young healthy volunteers receiving sedative concentrations of nitrous oxide, reported various visual and auditory illusions and hallucinations. These included such bizarre things as reports of Mozart operas or radio broadcasts being played in the room, people visually disappearing, and several instances of either verbal instructions or physical movements by persons in the room being completely misinterpreted. Paranoid ideas were also reported.

When dreams or hallucinations are reported, patients rarely specify the type of experience, and, in fact, they often forget many details. Sexually oriented hallucinations associated with nitrous oxide have not been described in the recent clinical literature; however, sexually related responses associated with nitrous oxide sedation are known. Allen[9] writes "a female chaperone is essential in an office where nitrous oxide-oxygen is administered, owing to the propensity of females under nitrous oxide-oxygen to have sexual aberations." Sensations of sexual orgasm have been occasionally described by female patients having routine dental care while under nitrous oxide sedation (F. Quarnstrom and F. Schwartz, personal communications). Malamed (unpublished data) in a recent survey of 50 female dental hygiene students, reports that 18% of the students expressed a feeling of sexual arousal or increased sexuality while receiving nitrous oxide. It is possible that sexually oriented dreams or hallucinations occur frequently during nitrous oxide sedation but, as dental treatment is usually given with both assistance and in a busy office setting, potential complaints are obviated by the relative unlikelihood of the experience having occurred. Additionally, patients seem to be reticent to report such phenomena.

During review of the records of these cases, we were impressed by the difficulty of determining whether an assault had actually occurred. In such circumstances, peripheral information such as time of day, type of treatment, personal relationship of the dentist with the patient, has been used to incriminate a person.

**Summary and recommendations**

Nine cases of sexually oriented experiences that occurred with the use of nitrous oxide sedation are reported. Evidence suggests sexually oriented hallucinations may occur under nitrous oxide sedation, particularly when nitrous oxide is administered in concentrations greater than 50%.

The following recommendations are made: never sedate a patient without an assistant present in the room; and do not routinely use nitrous oxide in concentrations greater than 50%.

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8. Brodsky, L., and Zuniga, J. Nitrous oxide: a psychotogenic agent. Compr Psychiatry 10:(2):185-288, 1975.

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## LETTERS TO THE EDITOR

THE JOURNAL devotes this section to comment by readers on topics of current interest to dentistry. The editors reserves the right to edit all communications to fit available space and requires that all letters be signed. Printed communications do not necessarily reflect the opinion or official policy of the Association. Your participation in this section is invited.

### Nitrous oxide "hallucinations"

The attempt by Jastak and Malamed (July 1980) to add credence to the fallacy that nitrous oxide causes sexual hallucinations in young females falls far short of its goal. A recent computerized literature search has failed to discover a single well-documented case of such an event. And, the nine cases reported by these authors offer no scientific evidence whatsoever that would implicate nitrous oxide as an hallucinogen. To the contrary, the incriminating circumstances – young female, no third party (witness?) – point to the dentist as the culprit. Although the article cited by Jastak alludes to such documentation, the original article describes three (of 1,060) cases of "hallucinations" – none of a sexual nature. Unfortunately, the dental literature is replete with such unsubstantiated claims as noted by Allen that "a female chaperone is essential in an office where nitrous oxide-oxygen is administered, owing to the propensity of females under nitrous oxide to have sexual aberrations."

Remarks such as this only serve to offer the would-be dentist/molester an excuse to his female patients or an alibi in a court of law. I have personal knowledge of 38

such cases of "sexual hallucinations" involving three dentists of "excellence of prior professional service and ethical and moral standing in the community or church." Unfortunately, husbands witnessing such dentist-patient "relations" did not experience similar fantasies themselves nor did television cameras surreptitiously placed by district attorneys who had received multiple complaints from numerous patients. All three dentists served prison sentences for their parts in making their patients' nitrous oxide "dreams" come true!

The juries did not buy the dentists' "hallucination" story – and frankly – I don't either. After all, it does seem a bit more than coincidental that sexual fantasies only occur in the minds of young (and attractive?) female patients in the absence of a third party but in the presence of a respected member of our profession(a dirty old man?).

C. RICHARD BENNETT, DDS, PhD
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*Authors' comment*: We wish to thank Dr. Bennett for his objective comments regarding our recently published article, "Nitrous oxide sedation and sexual phenomena." However, we do wish to point out that, although the issue was not emphasized, no attempt was made to deny that sexual assault under nitrous oxide sedation can occur. In fact, a statement was specifically made in the discussion indicating the difficulty of determining (in many instances) whether an assault had in fact occurred and that peripheral information has been used to incriminate (and convict) individuals.

We have since learned that one of our cases was unequivocally an assault. Several others may have been, but the data were not always convincing or sufficient and several, clearly, were not. However, all the dentists were guilty of poor judgment and violating propriety when they should have known better. As far as Dr. Bennett's implication that fantasies occurring in "young and attractive" female patients should be considered more than coincidental – perhaps, but psychological studies previously quoted[1] have suggested young women under stress may be more prone to hallucinogenic events under appropriate conditions. Moreover, why shouldn't we expect sexual responses more often in the young? Although not absolute, common sense indicates younger individuals are more sexually active than older persons. Additionally, nowhere in the article was the appearance of the patient discussed or alluded to. In fact, in one of the cases, the woman involved was physically quite unattractive. In regard to the dearth of published reports in the literature, we are not at all surprised. Human sexuality and related issues have been widely discussed and written about only within the last decade as our societal views on the subject have changed. Interestingly, since the article has been published, we have received several letters and phone calls on this issue. In one instance, a dentist practicing in the Southwest described how a "young, attractive" female patient reported that breathing a 50% nitrous oxide-oxygen mixture was just like having sex! (Note, there was a female assistant present).

As far as Dr. Bennett's assertion that the three cases of hallucinations described in a previous study[2] were not sexually oriented, I would inquire about his source of

information. In that paper, no specific description about the type of hallucination was ever written or is in fact currently available.

That a male dentist could be accused of being in a suggestive situation simply because he happens to be alone with a female patient (all things being equal), we believe, is carrying the matter a bit far especially since the practice is widespread as a matter of occasional convenience or emergency. However, we don't condone it and, in fact, think it is in very poor judgment especially when using nitrous oxide-oxygen sedation and particularly in light of our published cases.

For us, the bottom line of the article is that the profession should be aware of this problem: first, to prevent those innocent individuals who may, because of clinical or other circumstances, place themselves in a compromising situation and, second, to warn those individuals who may attempt unethical behavior that nitrous oxide doesn't protect them or their profession from severe criticism or worse.

Finally, we are acutely aware that this subject is a sensitive one, subject to much emotion and involving a variety of preconceptions and misconceptions. However, we also believe in a legal system that states that all individuals are presumed innocent unless proved guilty beyond a reasonable doubt. In spite of Dr. Bennett's experience, to assume that all such reports are obviously assault is scientifically, morally, and probably legally wrong, as well as not agreeing with the wide range of human situational responses known to be possible.

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1. Steinberg, H. Abnormal behavior induced by nitrous oxide. Br J Psych 47:183-194, 1956.

2. Jastak, J.T., and Paravecchio, R. An analysis of 1331 sedations using inhalation, intravenous and other technics. JADA 91(6):1242-1249, 1975.

**Word from a witness**

Since I was the defense "expert" witness to several of the molestation cases at which Dr. Bennett testified for the prosecution, it is only proper that I, too, respond to his letter to the editor (October 1980) reprimanding Jastak and Malamed's report of sexual hallucinations (July 1980).

There can be no argument about whether or not nitrous oxide is an hallucinogen. Its original usage was for hallucinogenic purposes alone. Its analgesic properties were only discovered by accident: Wells recognized this property when a 19th century sniffer injured himself. Unfortunately, there are still many health professionals (nurses, doctors) who sniff it for its "high." The occasional deaths are testimony to this occurrence.

Certainly, not all hallucinations are sexual. But it is reasonable to assume, in this sexually oriented society, that some are. Although it is only the female who complains of abuse, this does not prove that there is abuse, but rather that there are differences in our cultural sexuality. No male who thought that a dental nurse invaded his private parts while he was under the influence of nitrous oxide would dare complain. He would be a subject of social ridicule.

Dr. Bennett quotes Dr. Allen's wise counsel that dentists should not treat a patient without a female assistant present. Bennett then responds to Allen thusly, "A remark such as this only serves to offer the would-be dentist/molester an excuse . . . " This latter statement is Bennett's prejudice and not his own expert knowledge. It

is contrary to existing psychological thinking. The molester is sick, and a false accuser can be equally sick. A "sickee" needs no excuse.

I concur emphatically with Dr. Allen's insistence on the presence of a female dental assistant at all times, but the realities of office practice many times override a doctor's better sense. The most recent 1977 ADA survey of office personnel indicates that 9% of the dentists do not have any assistants at all, while 52% have only one. This latter statistic means that during lunch hours, coffee breaks, telephone calls, sick days, late days, early days, these dentists are without an assistant. I wonder how many of us would have the fortitude and wisdom to cancel the appointments of patients who are scheduled for inhalation sedation. How many patients would accept the cancellation? I could not find a statistic to answer the latter dilemma. The absence of an assistant is a foolishness, but not a crime, nor a prima facie case of molestation.

Neither Dr. Bennett's opinion, nor mine, on guilt or innocence is relevant, since our expertise is in and of the drug, and not the act. He steps out of his proper role when he says, "The juries did not buy the dentists' 'hallucination' story, and frankly, I don't either." Except for the few hours of our own testimony. Dr. Bennett and I were totally absent from the trials. Neither he nor I were, or are, in the position to judge guilt or innocence . . . nor should we.

I consider the report by Drs. Jastak and Malamed enlightening and pertinent to today's practice.

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The Journal of Sex Research Vol. 19, No. 1, pp. 49-57
February, 1983

# The Effects of Nitrous Oxide and Naloxone on Orgasm in Human Females: A Preliminary Report

MARK A. GILLMAN AND FREDERICK J. LICHTIGFELD

**Abstract**

The effect of nitrous oxide and naloxone, alone and in combination, on female orgasm was investigated. Nitrous oxide enhanced sexual fantasy, whereas naloxone dose – dependently given immediately prior to orgasm – either heightened or diminished sexual pleasure. The bimodal pattern suggests the possibility that the same dual biological system which mediates pain perception may also mediate orgasm. The possible use of nitrous oxide analgesia, with or without naloxon, as a diagnostic, experimental, and therapeutic tool is discussed.

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For many years the use of nitrous oxide ($N_2O$) has been associated with sexual fantasies (Zador, 1928). Possibly as a result of this, certain ethical problems have arisen concerning its use. This was particularly true when $N_2O$ was used as a general anesthetic agent by dentists who simultaneously acted as the anesthetist. This practice has now largely disappeared. With the advent of inhalation sedation, or relative dental analgesia (the use of $N_2O$ as a relaxant and analgesic where the concentration of oxygen is never allowed to fall below that present in atmospheric air), however, this problem has again arisen. Some patients, as a result of sexual fantasies experienced during inhalation sedation, have even accused the dentist of sexual assault (Jastak & Melamed, 1980).

By using relative analgesia in humans (Gillman, Kok, & Lichtigfeld, 1980; Gillman & Lichtigfeld, 1981), we have confirmed the observation of other workers, in *vitro* (Ahmed & Byrne, 1980) and in *vivo* (Berkowitz, Finck, & Ngai, 1977), that the endogenous opiates are implicated in $N_2O$ analgesia. There is now evidence to support a role for the endogenous opiate system in sexual behavior (Gessa, Paglietti, & Pellegrini Quarantotti, 1979; Meyerson & Terenius, 1977; Pellegrini Quarantotti, Corda, Paglietti, Biggio, & Gessa, 1978). Stein and Belluzzi (1978) have postulated that the endorphins might mediate appetitive drives. Heath (1972) has demonstrated that chemical stimulation of the septal area could lead to orgasm. Deep and surface electroencephalographs were recorded during sexual arousal in two patients. Recordings were made for the male during masturbation and coitus. The female patient achieved orgasm following micro injection of acetylcholine and levarterenol bitartrate into the septal

region on separate occasions. From these recordings Heath concluded that there was a correlation between pleasure states and activation of the septal region. This area has been shown to be richly endowed with tissue containing endogenous opiates (Cuelo, 1978). Heroin addicts have reported acute sexual pleasure lasting up to 1 minute – "the rush" – after an intravenous injection of dihydromorphine (Chessick, 1960).

These findings prompted us to investigate the role of the endogenous opiate system in pleasure responses in man using $N_2O$ and naloxone (Nx.)

## Method

*Subjects*

Informed consent was obtained from seven Caucasian, healthy, unmarried women, three of whom were divorced. Their ages ranged from 22 to 39. The subjects were chosen after a full and frank discussion of the nature of the investigation, with particular reference to the rating scale. Subjects were informed that results of the study might lead to a better understanding of the nature of the sexual response, which could also result in better treatment for sexual dysfunction. This proviso was crucial for the participation of these subjects since no payment was made for their assistance during the study.

All seven subjects participated in the $N_2O$ study. Four volunteered for the naloxone experiment as well. All of the subjects were known to us on a professional basis, but none of them had received or were receiving psychiatric treatment from us or from any other practitioner. All

subjects were employed in a clerical capacity. As far as we know, they were not known to each other, and they were not introduced to one another either during or after the study. The work was carried out in the laboratory of the South African Brain Research Institute.

It should be noted that all subjects had, at one time or another, received $N_2O$ during dental procedures and, therefore, were not totally naive with regards to the effects of this gas.

*Apparatus*

The gases ($N_2O$ oxygen, and atmospheric air) were administered by means of a quantiflex relative analgesia machine, which consists of two rotameter tubes connected to a nasal mask. The nasal mask has an exhalation and an inhalation valve. The exhalation valve was open and the inhalation valve was closed during all experimental procedures. The manufacturer's specifications (Medishield Ltd.) state that provided both the inhalation valve and the patient's mouth are kept closed during administration, the gas concentrations shown on the gauge are within 5% of the concentration being inhaled by the patient. Incorporated within this system is a fail-safe device that automatically discontinues the $N_2O$ if the $O_2$ level falls below 3 litres per minute. This equipment is standard inhalation equipment used routinely in dentistry (Langa, 1976, Chap. 10). The oxygen and the medical air, or $N_2O$, were delivered from separate cylinders (Afrox, S.A. Ltd.). Naloxone HL, ampules containing 0.4 mg. per ml. (Endo Laboratory Inc.), or placebo (distilled water) were given by an intravenous bolus injection.

*Procedure for $N_2O$ Study*

The subjects were instructed to rate their degree of sexual arousal from 1-7 (Henson, Rubin, & Henson, 1979) as follows: (1) no genital sensation, (2) mild genital sensation, (3) moderate genital sensation, (4) slightly strong genital sensation, (5) strong genital sensation, (6) vaginal lubrication, (7) orgasm.

Four experimental treatment sessions, administered in a random order, were conducted on each subject, with at least 2 weeks between each session; two with $N_2O$/oxygen mixture and two with atmospheric air. The $N_2O$ flow was determined empirically in the following manner: At one session prior to the experimental session, the level of $N_2O$ required to give an "all over tingling" sensation was found (i.e., a level at which the subject's state of consciousness was almost unaffected).

Neither the subjects nor the experimenters were aware of which gas mixture was being supplied, but it is well known that subjects who are not $N_2O$ naive are often capable of distinguishing which gas is being administered by its effects. It is, therefore, not possible to state that these were double-blind studies. In view of this, and to obviate biased results, subjects were told that the experimental procedures might have no effect, a negative effect, or a positive effect on their degree of sexual arousal. Sessions were carried out between 2:00 p.m. and 4:00 p.m. and lasted approximately 60 minutes each. All subjects were interviewed, selected, and briefed thoroughly prior to the experimental session.

The subjects laid down on an examination couch and the nasal mask was applied. They were then told to rate

their degree of sexual arousal (Henson, et al., 1979) prior to the administration of the gas and 20 minutes after the commencement of gas flow, at which point 100% oxygen was administered in all cases for an additional 20 minutes. This was necessary in order to clear all residual $N_2O$ from the subject's system, and, thus, to match the experience of all subjects as much as possible, even in those cases in which $N_2O$ was not received. The patients were also asked to fantasize sexually during the period between the two ratings, but no specific instructions were given with regard to how this should be done. The patients were left alone during the period of sexual fantasy but were able to call for assistance at any time by means of a buzzer.

*Procedure for Naloxone Study*

Four of the original subjects volunteered for this part of the study. Only one subject in this group received $N_2O$ prior to naloxone (Nx) administration because she was unable to masturbate to orgasm without its use. Two other subjects were able to masturbate to orgasm, while subject no. 1 (see Table 1) was able to fantasize to orgasm without masturbation. Both experimenters were present throughout each experimental session involving Nx. This was done to observe the subject and also to emphasize, by their detached and objective presence, that a scientific experiment was being conducted. The subjects adjusted their clothing to a degree of maximal comfort in private and then covered themselves with a blanket.

A butterfly needle (No. 23) was inserted into a forearm vein of the passive hand and was taped down. The

subjects were instructed to attempt to achieve orgasm by masturbation if necessary. Hyperventilation occurs in the late plateau preorgasmic stage of sexual arousal (Masters & Johnson, 1966). Accordingly, the injection of Nx or placebo by an intravenous bolus was given immediately after five hyperventilatory respiratory cycles had been counted from the onset of hypervenilation. For all the subjects studied in this report, this seemed to coincide with the late preorgasmic stage. Nx or distilled water was injected double-blind in all cases. The dose of Nx varied between 0.4 and 4 mg (see Table 2). Since all subjects used in this part of the study happened to be multiorgasmic, it was possible to use Nx and placebo at the same experimental session.

Table 1

Effect of $N_2O/O_2$ Mixtures and Air on Sexual Arousal Treatment[a]

| Subject | | Air | | $N_2O$ | | Air | | $N_2O$ | |
|---|---|---|---|---|---|---|---|---|---|
| No. | Age | Before | After | Before | After | Before | After | Before | After |
| 1 | 39 | 2 | 7 | 1 | 7 | 1 | 7 | 2 | 7 |
| 2 | 22 | 1 | 3 | 1 | 6 | 1 | 3 | 1 | 5 |
| 3 | 24 | 1 | 2 | 2 | 5 | 1 | 3 | 1 | 6 |
| 4 | 33 | 1 | 3 | 1 | 4 | 1 | 2 | 1 | 6 |
| 5 | 28 | 1 | 4 | 1 | 6 | 1 | 3 | 1 | 6 |
| 6 | 27 | 1 | 3 | 2 | 6 | 2 | 4 | 1 | 4 |
| 7 | 23 | 2 | 3 | 1 | 5 | 2 | 4 | 1 | 5 |

*Note.* Numbers represent degree of sexual arousal: (1) no genital sensations, (2) mild genital sensations, (3) moderate genital sensations, (4) slightly strong genital sensations, (5) strong genital sensations, (6) vaginal lubrication, (7) orgasm.

[a]The four sessions were administered in a random order for each subject.

## Results

*$N_2O$ Study*

The data are presented in Table 1. Since each of the gases was administered on two separate occasions, a *t*-test for related samples was performed on the difference scores: rating of degree of sexual arousal after receiving atmospheric air minus rating of degree of sexual arousal after receiving $N_2O$. The degree of sexual arousal after the administration of $N_2O$ was significantly higher, $t(13) = 5.51$, $t < .001$.

Using the Wilcoxon signed-ranks test for matched pairs (two-tailed test) and comparing the above differences, the value of the smaller sum T is 0, and one of the difference scores is also zero, reducing *n* to 6. When *n* is 6 a T value of 0 is significant. Thus, the observed differences

Table 2

Effect of Naloxone on Orgasm

| Subject | Age | $N_2O$ Flow Rate per Minute | Dosage for Enhancement of Response | Dosage for Inhibition of Response | Latent[a] Period (Minutes) |
|---|---|---|---|---|---|
| 1 | 39 | 0 | 2 mg (2)[b] | Not Done | – |
| 2 | 22 | 0 | 0.4 (2) | 2 mg (4) | 10 |
| 3 | 24 | 0 | Not Done | 2 mg (1) | 9 |
| 4 | 33 | 3 | 2 mg (4) | 4 mg (4) | 8 |

[a]Latent period refers to period after injection before orgasm was possible.

[b]The number in parentheses refers to the times the experiment was conducted at that dosage.

in the ranks are significant. It can be said that $N_2O$ caused significantly more sexual arousal than did air. In only one subject was the response the same as air and $N_2O$; in this case, orgasm occurred on all occasions without masturbation.

*Naloxone Study*

The results of this phase of the study are summarized in Table 2.

*Subject 1.* In the case of this subject, since orgasm was possible with fantasy alone, with or without $N_2O$, we decided to test her response to Nx without any gas administration. Here, 2 mg Nx on two separate occasions enhanced orgasmic pleasure, causing the spontaneous admission "that these orgasms were the best she could remember."

*Subject 2.* This subject was able to masturbate to orgasm without the $N_2O$. On four occasions, 2 mg Nx abolished sexual arousal for up to 10 minutes. After this latent period, orgasm was again possible. In two additional, separate experiment sessions, .4 mg Nx enhanced sexual pleasure.

*Subject 3.* This subject was tested on one occasion. An injection of 2 mg Nx inhibited orgasm; the latent period following the injection lasted 9 minutes.

*Subject 4.* This subject received $N_2O$ at 3 L per minute and stage 6 of the rating scale was reached; however, masturbation was required to achieve orgasm. Four separate experiments were conducted using either 2 mg Nx or 4 mg Nx on each occasion. The lower doses enhanced

orgasmic pleasure whereas the higher doses inhibited it. A latent period of 8 minutes followed inhibition of orgasm.

In all cases where orgasm occurred it was within 45 seconds of injection. The injection of water did not interfere with the sexual response of any of the subjects at any stage.

## Discussion

These results indicate that $N_2O$ enhances sexual arousal and intensifies the effect of sexual fantasy, possibly by stimulation the endogenous opiate system (Gillman, Kok, & Lichtigfeld, 1980; Gillman & Lichtigfeld, 1981). Sexual arousal was maximal with $N_2O$ administration, except in one case (see Table 1).

Nx, when administered just prior to orgasm, can either enhance or inhibit orgasm. The inhibition was followed by a latent period in all cases. These results with Nx appear to conflict with those of other workers (Goldstein & Hansteen, 1977). However, they report on only one case, using a male subject, and the injections were not given immediately prior to orgasm. In that study, as the dose of Nx was increased the time from erection to ejaculation diminished while the time to erection increased. Moreover, there seemed to be incomplete satisfaction with orgasm at the higher dosage of Nx in their case. It is possible to speculate that there may be a difference between male and female subjects in the mechanism of orgasmic response. The possibility of this is presently being investigated.

Our findings are supported by other workers who have shown that Nx increases post-ejaculatory latency and that copulation is anti-cociceptive (Szechtman, Hershkowitz, & Simantov, 1981).

It is interesting to note that prior to these experiments only two of the four subjects studied with Nx were aware of their multiorgasmic potential. This suggests that $N_2O$ and Nx alone, or in combination, may be of benefit in the treatment of sexual disorders. Since the work of Heath (1972), very little has been done on the neurochemical mechanisms of orgasm in human subjects. The use of $N_2O$ to stimulate the opiate system in man may prove to be a useful experimental (Gillman, Kok, & Lichtigfeld, 1980), diagnostic (Gillman & Lichtigfeld, 1981), and therapeutic tool.

In our earlier work on pain, Nx caused a bimodal response in the presence of $N_2O$ analgesia (Gillman, et al., 1980). In this work we showed that low doses of Nx (0.4 – 2 mg) in some subjects inhibited $N_2O$ analgesia, whereas, in other subjects $N_2O$ analgesia was enhanced. Since Nx at low doses (as were used in our study) is widely recognized as a pure opiate antagonist (Gevert & Goldstein, 1977; Jasinski, Martin, & Haertzen, 1967), our biphasic results could not be explained in terms of an agonistic action of Nx. We hypothesized, therefore, that pain perception was modulated by two opposing systems: one opiate and the other anti-opiate.

Furthermore, it has been suggested that ACTH (corticotrophin) may be one of the endogenous anti-opiate substances (Bertolini, Poggioli, & Ferrari, 1979). We propose that the biphasic effect of Nx found in this work

gives indirect and preliminary evidence that same dual system described earlier could be implicated in pain and pleasure modulation. This connection between pain and pleasure is further supported by the work of Szechtman, Hershkowitz, and Simantov, 1981.

In view of the small number of subjects used in this study, these results must be regarded as only preliminary and tentative; they seem to offer a means of further investigating the relationship between the endogenous opiate system and the sexual response.

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*Accepted for publication March 18, 1982*
*Initial submission March 16, 1981*

# Awareness, Dreams, and Hallucinations Associated with General Anesthesia

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The incidence of mental aberrations (awareness, dreams, and hallucinations) in 490 adult patients undergoing a variety of surgical procedures was investigated.

The total incidence of mental aberrations reported was 11 percent (awareness 1 percent, hallucinations 2 percent, dreams 8 percent).

No statistically significant correlation was found between the incidence of unusual mental reactions and the anesthetic agents employed, the age or sex of the patients, or the duration or type of surgical procedure.

THROUGHOUT the years, a topic of great concern and the subject of numerous studies and reports has been the problem of awareness, dreaming, and other mental aberrations experienced by patients undergoing general anesthesia and surgical operations.

Several reports[1-3] have indicated an increased risk of mental aberrations in patients anesthetized with $N_2O$-$O_2$-relaxant technics. Other investigators[2-5] have examined

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Read at the 49th Congress of the International Anesthesia Research Society, March 16-20, 1975, Hollywood, Florida.

Paper received: 3/17/75
Accepted for publication: 4/9/75

the incidence of such developments in patients anesthetized by this basic $N_2O$-$O_2$-relaxant technic, supplemented by a variety of adjuvants such as halothane, Innovar®, ketamine, narcotics, and other drugs, noting varying results.

The purpose of this prospective study was to determine, by interviews in the postoperative period, the incidence of dreams, awareness, and other mental aberrations in adult patients in everyday general anesthetic practice using a variety of technics. *Awareness* was defined as the ability of the patient to recall, with or without prompting, any event occurring during the period when the patient was believed to be unconscious. *Hallucinations* were judged to be apparent perceptions (visual, auditory, or tactile) of nonexistent objects or stimuli. *Dreaming* was defined as a train of thoughts or images passing through the mind, which the patient believed occurred between the induction of anesthesia and the first moment of consciousness after the completion of the anesthetic procedure. The plan was to try to relate the incidence of these aberrations to those critical variables (sex, age, anesthetic agents, etc.) which might influence the anesthetic experience.

## METHOD

Each day, by randomized selection, 6 to 8 elective-surgery patients scheduled for general anesthesia were allotted to the study. To avoid differences in interpretation, the same anesthesiologist (SLW) interviewed all patients in depth at 24 hours and 48 to 72 hours postoperatively.

The nature of the interview was uniform and similar to that used by Brice and co-workers,[1] incorporating the following fundamental questions:

1. What was the last thing you remembered before going to sleep?

2. What was the first thing you remembered on awakening?

3. Did you dream or have any other experience while you were asleep?

4. What was the worst thing about your operation?

5. Have you any unpleasant memories associated with any previous anesthesia?

Each interview was conducted in a casual, conversational manner after the interviewer identified herself, and the patient was told that the information was being sought in an attempt to continue to improve patient care. No leading questions were asked at first, and no attempt was made to elicit specific responses. For example, only if patients failed to mention dreams in response to varying questions regarding recall before, during, and after the anesthetic experience, were they asked if they dreamed during anesthesia.

Only when the series of interviews were complete, was the patient's record consulted for information relating to physical characteristics, premedication, anesthetic agents employed, the course of anesthesia, etc.

Data were analyzed statistically by an arc sine ($\sin^{-1}$) transformation to normalize percentages for application

to the normal distribution curve, and by analysis of variance, using a G-statistic for reference to the chi-square distribution. A level of 5 percent was accepted as significant.

## RESULTS

Table 1 reveals that sex distribution for the 490 patients was almost 2:1, F:M. This preponderance of female patients (64.9 percent) is not statistically different from a sample of patients receiving general anesthesia each month in our hospital (66.6 percent female).

TABLE 1

Physical Characteristics and Duration of Anesthesia

| | Sex | | |
|---|---|---|---|
| | Female | Male | Total |
| Number | 318 | 172 | 490 |
| Percent of total | 64.9 | 35.1 | – |
| Age, yr | | | |
| Mean | 43 | 46.6 | 44.4 |
| Range | (15 to 83) | (16 to 89) | |
| Duration of anesthesia, min | | | |
| Mean | 98.9 | 88.3 | 96.5 |
| Range | (10 to 300) | (20 to 310) | |
| Weight, kg | | | |
| Mean | 64.4 | 80.3 | 70.1 |
| Height, cm | | | |
| Mean | 162.4 | 180.9 | 164.5 |

TABLE 2

Patient Distribution With Respect to Surgical Procedure

| | Female | Male | Total |
|---|---|---|---|
| General surgery | | | |
| A. Intra-abdominal | 61 | 29 | 90 |
| B. Nonabdominal | 82 | 72 | 154 |
| Gynecologic | | | |
| A. Intra-abdominal | 75 | – | 75 |
| B. Nonabdominal | 42 | – | 42 |
| Orthopedic | 32 | 43 | 75 |
| Plastic | 11 | 11 | 22 |
| Oral | 7 | 7 | 14 |
| Genitourinary | 8 | 10 | 18 |
| Total | 318 | 172 | 490 |

The distribution and types of operative procedures in the study (table 2) reflect the bias in selecting patients who could be interviewed at 24 hours and subsequently. The preponderance of halothane usage (64 percent) (table 3) resembles the usual distribution in our daily operative schedule.

Certain features were common to all the anesthetics administered. For example, all but 2 patients (0.4 percent) received premedication. Of the 2 unpremedicated patients, one man dreamed, while a woman did not experience any mental aberration. Although a uniform dose

(mg/kg) for sodium thiopental could not be determined, 95 percent of the patients studied (465 of 490) received this drug as part of their induction. $N_2O$ was used as the basic anesthetic in each patient, the concentration administered varying between 50 and 70 percent.

The overall incidence of mental aberrations (as previously defined) was 11 percent (54/490). The physical characteristics and duration of anesthesia for these patients is shown in table 4. Nine percent (43/490) stated that they had experienced mental aberrations during a prior anesthetic experience. Fourteen percent (6/43) again experienced aberrations during the present anesthetic experience.

*Awareness.* – Four patients (1 percent, all women) gave accounts suggesting that they had been aware of some part of the intraoperative period (table 5). None indicated any awareness of pain. Two reported hearing conversations in the operating room (male voices especially), one clearly recalled tracheal intubation, and another stated that, for a brief moment, there was a stinging sensation in the area of the operative procedure. These patients could not be differentiated from the overall group on the basis of age (mean 38 yr), anesthetic agents used, premedication (all received preoperative drugs), duration of anesthetic (mean 97.5 min), or type of surgical procedure.

*Hallucinations.* – Twelve patients (2 percent), equally divided F:M, reported an experience interpreted as an hallucination (table 6): 83 percent believed that the experience occurred in the operating room, while one each occurred in the recovery room and on the ward, the last named being related to an intramuscular injection of

TABLE 3

Distribution of Patients According to the Principal Anesthetic Employed. Nitrous Oxide (50 to 70 Percent) was the Basic Anesthetic for Every Patient

| Anesthetic | Total group, n = 490 | | Patient experiencing dreams, n = 38 | | Patient experiencing hallucinations, n = 12 | |
|---|---|---|---|---|---|---|
| | Number | Percent | Number | Percent | Number | Percent |
| Halothane | 312 | 64 | 26 | 68 | 6 | 50 |
| Narcotic | 93 | 19 | 8 | 21 | 2 | 17 |
| Enflurane | 46 | 9 | 0 | – | 2 | 17 |
| Innovar® | 18 | 4 | 1 | 2.6 | 1 | 8 |
| Ketamine | 11 | 2 | 3 | 7.9 | 1 | 8 |
| $N_2O$-$O_2$-relaxant | 1 | 0.2 | 0 | – | 0 | – |
| Other | 9 | 1.8 | 0 | – | 0 | – |

TABLE 4

Physical Characteristics and Anesthetic Duration for 54 Patients Experiencing Mental Aberrations

| Mental aberration | Number | Age, yr | | Weight, kg | | Height, cm | | Duration, min | |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Range | Mean | Range | Mean | Range | Mean | Range |
| Awareness | | | | | | | | | |
| Female | 4 | 38 | 26-48 | 64.6 | 52.75 | 162.8 | 156.2-170.2 | 97 | 45-165 |
| Male | 0 | | | | | | | | |
| Hallucinations | | | | | | | | | |
| Total | 12 | 41.7 | | 77.7 | | 167.3 | | 80 | |
| Female | 6 | 44.0 | 29-64 | 81.8 | 70-93 | 161.3 | 157.5-165.1 | 94 | 40-150 |
| Male | 6 | 39.4 | 17-61 | 73.6 | 57-90 | 173.2 | 167.6-177.8 | 66 | 45-85 |
| Dreams | | | | | | | | | |
| Total | 38 | 46.3 | | 72 | | 172.8 | | 109 | |
| Female | 27 | 43.6 | 18-76 | 63.8 | 40-103 | 168.0 | 149.9-180.3 | 108 | 25-270 |
| Male | 11 | 48.9 | 20-82 | 80.2 | 67-93 | 177.5 | 172.7-185.4 | 110 | 40-190 |

TABLE 5
Mental Aberrations: Awareness
(n = 4)

| Age, yr | Sex | Surgical procedure | Adjuvant to $N_2O$ | Description |
|---|---|---|---|---|
| 47 | F | Breast biopsy | Halothane | Heard Men's voices |
| 48 | F | Radical mastectomy | Halothane | Heard conversation about a positive biopsy |
| 26 | F | Vaginal hysterectomy | Innovar | "Something going down my throat" |
| 31 | F | Laparoscopic tubal ligation | Narcotic | Stinging sensation at operation site |

TABLE 6

Mental Aberrations: Hallucinations
(n = 12)

| Age, yr | Sex | Surgical procedure | Location | Adjuvant to $N_2O$ | Description |
|---|---|---|---|---|---|
| 41 | M | Inguinal hernia repair | Operating room | Halothane | Visual – getting shot in upper arm |
| 41 | F | Cholecystectomy | Operating room | Halothane | Visual – shot in hip just outside operating room |
| 46 | F | Abdominal hysterectomy | Operating room | Halothane | Visual – yellow lights, floating in space, whirlwind |
| 61 | M | Inguinal hernia repair | Operating room | Halothane | Visual – lady praying |
| 64 | F | Sigmoid polypectomy | Operating room | Halothane | Auditory – singing |
| 57 | M | Inguinal hernia repair | Ward, after surgery | Halothane | Visual – strands of foam floating in room* |

| | | | | | |
|---|---|---|---|---|---|
| 43 | M | Excision radial head | Operating room | Enflurane | Visual – rubber sheet over head |
| 17 | M | Inguinal hernia repair | Operating room | Enflurane | Auditory – ringing noise in head during operation |
| 40 | F | Breast biopsy | Operating room | Narcotic | Visual – being made to lie in pile of black mud |
| 35 | M | Hemorrhoidectomy | Recovery room | Narcotic | Visual – looking for bottles and cigarettes under pillow and on shelves |
| 29 | F | Cholecystectomy | Operating room | Innovar | Visual – anesthetist leaving, and answering telephone |
| 61 | F | Exploratory oophorectomy | Operating room | Ketamine | Visual – on trip; floating sensation |

*After receiving an intramuscular injection of meperidine.

meperidine. Ten "hallucinating" patients recounted visual while the other 2 identified auditory aberrations. Attempts to differentiate these patients statistically from the overall study group were unsuccessful when comparing age (mean 41.7 yr), sex, duration of anesthetic (mean 80 min), surgical procedure, or anesthetic agent used.

*Dreaming.* – The incidence of dreaming believed to have occurred during surgery (table 7) was 8 percent (38/490), with a predominant female distribution (71 percent). All but 4 were able to recall details. When the dream content was explored, 60 percent reported pleasant or not unpleasant dreams while 40 percent reported unpleasant dreams. No correlation was found between pleasant and unpleasant dreams and the anesthetic agent used. No dreams suggested physical sensations that might be connected with the operation. Again, these patients could not be differentiated statistically from the overall group on the basis of age (mean 46.3 yr), sex (F:M, 2:1), duration of anesthesia (mean 109 min), operative procedure, or anesthetic agents (table 7).

TABLE 7

Mental Aberrations: Dreams
(n = 34)

| Pleasant or not unpleasant | | | | | Unpleasant | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Age, yr | Sex | Surgical procedure | Adjuvant to $N_2O$ | Description | Age, yr | Sex | Surgical procedure | Adjuvant to $N_2O$ | Description |
| 58 | F | Carpal tunnel | Halothane | Working in church | 53 | F | Colostomy revision | Halothane | Family fighting |
| 30 | F | Abdominal hysterectomy | Halothane | Family | 44 | F | Open reduction tibia | Halothane | Auto accident |
| 21 | F | Excision pilonidal cyst | Halothane | On a mountain top | 68 | F | Vaginal hysterectomy | Halothane | Conversation with dead husband |
| 43 | F | Varicose vein strip | Halothane | Anesthesiologist | 29 | F | Laparoscopic tubal ligation | Halothane | Child in danger |
| 67 | M | Exploratory laparotomy | Halothane | Family | 50 | F | Breast biopsy | Halothane | Trying to open car door |
| 27 | M | Pilonidal cyst | Halothane | Baseball | 65 | M | inguinal hernia repair | Halothane | Trying on slacks too tight in seat |
| 73 | F | Vaginal hysterectomy | Halothane | Vacation trip | 64 | M | Inguinal hernia repair | Halothane | Fell off wagon and broke hip |
| 20 | M | Arthrotomy knee | Halothane | Familiar people | 40 | F | Exploratory laparotomy | Halothane | Hospital experience |
| 24 | M | Repair finger | Halothane | Content unknown | 32 | F | Excision lipoma | Halothane | Bald; had stroke |
| 41 | F | Breast biopsy | Halothane | Action dream | 46 | M | Inguinal hernia repair | Halothane | Late for work |

TABLE 7 – Continued

Mental Aberrations: Dreams
(n = 34)

| Pleasant or not unpleasant | | | | | Unpleasant | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Age, yr | Sex. | Surgical procedure | Adjuvant to $N_2O$ | Description | Age, yr | Sex | Surgical procedure | Adjuvant to $N_2O$ | Description |
| 58 | F | Colectomy | Halothane | Work | 27 | F | Biopsy axilla | Narcotic | Death |
| 18 | F | Remove molars | Halothane | Home and school | 30 | F | Diagnostic laparoscopy | Narcotic | Child in hospital |
| 23 | F | Knee | Halothane | Operative procedure | 24 | M | Repair total hip | Narcotic | Family friend died |
| 76 | F | Abdominal perineal resection | Ketamine | Family | 74 | M | Exploratory laparotomy | Narcotic | Two men fighting; doctor's family |
| 49 | F | Vulvectomy | Ketamine | Foreign travel | 50 | F | Cholecystectomy | Narcotic | Silly; unknown illness |
| 44 | M | Tendon transfer | Narcotic | Content unknown | 38 | M | Tendon graft | Innovar | Content unknown |
| 53 | F | Breast biopsy | Narcotic | Content unknown | 48 | F | Oophorectomy | Ketamine | Care of child if patient should die |

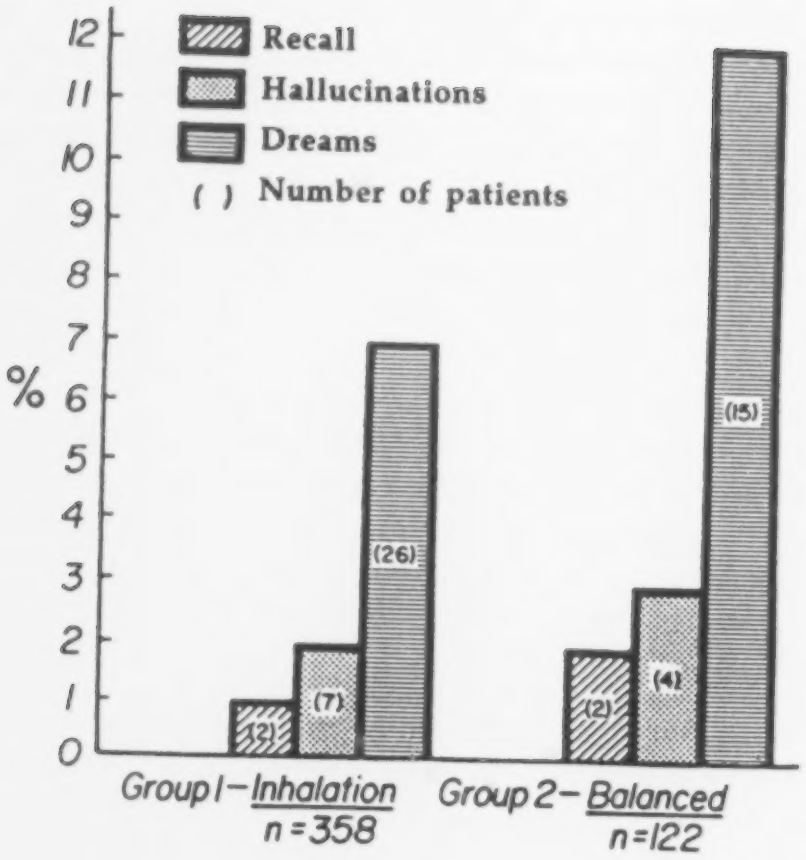


FIGURE. Mental aberrations (recall, hallucinations, or dreams) contrasted with anesthetic technic [inhalation (group 1) versus balanced (group 2)]. Numbers in parentheses represent number of patients in group experiencing each type of aberration.

Since it was not possible to demonstrate a difference between specific anesthetic agents within each mental aberration group, patients were divided according to whether they received predominantly inhalation (group 1) versus balanced (group 2) technics (figure). Group 1 includes halothane and enflurane, while group 2 encompasses ketamine, narcotics, Innovar, and other intravenous adjuvants. Comparison of the incidence of overall mental abberations between the two groups shows no statistical difference ($p>0.2$). However, within each group there is a statistically significant difference ($p<0.01$) between either recall or hallucinations versus dreams. Dreaming was clearly more common in both groups. There was no demonstrable difference between recall ($p>0.5$), hallucinations ($p>0.5$), or dreams ($p>0.05$) between groups 1 and 2.

*Psychotropic Drugs.* – A substantial number of patients (86/490; 18 percent) were taking some type of psychotropic medication, for example, benzodiazepines, tricyclic antidepressants, or phenothiazines before operation. It was thought that such therapy might play a part in unusual reactions after anesthesia. However, comparison between the total incidence of mental aberrations and each type separately showed no statistically significant correlation ($p>0.5$) between prior psychotropic therapy and anesthesia (table 8).

*Premedication.* – Sixty percent of the patients received a narcotic before arrival in the operating room (table 9). However, no statistical correlation ($p>0.2$) was found between such premedication and the incidence of unusual mental reactions.

Forty-four percent (217/490) of the patients received Valium as a premedication or induction agent. Similar to our findings with narcotics, there was no statistical correlation ($p>0.5$) between the use of this drug and unusual mental reactions. The exact comparison of the use of Valium within each group to the study population were as follows: awareness, 25 percent (1/4), dreams, 44 percent (17/38), and hallucinations, 58 percent (7/12).

## DISCUSSION

In the 490 patients, the overall incidence of unusual mental reactions in everyday general anesthetic practice was 11 percent, of whom 43 (9 percent) had experienced

TABLE 8

Influence of Prior Psychotropic Therapy

| | Taking psychotropic drugs | Percent | Total | Percent |
|---|---|---|---|---|
| Number of patients | 86 | 100 | 490 | 100 |
| Mental aberrations | 12 | 14 | 54 | 11 |
| Recall | 0 | – | 4 | 1 |
| Hallucinations | 2 | 2.3 | 12 | 2 |
| Dreams | 10 | 11.6 | 38 | 8 |

TABLE 9

Premedication (Narcotic Versus Nonnarcotic)

| | Narcotic | Percent | Total | Percent |
|---|---|---|---|---|
| Number of patients | 292 | 100 | 490 | 100 |
| Mental aberrations | 29 | 10 | 54 | 11 |
| Recall | 2 | 0.7 | 4 | 1 |
| Hallucinations | 4 | 1.4 | 12 | 2 |
| Dreams | 23 | 8 | 38 | 8 |

* * *

mental aberrations with prior anesthetic procedures. However, only 6 of these 43 (14 percent) experienced mental aberrations following anesthesia in this investigation. To our knowledge, previous investigators have not made this correlation; this would perhaps reflect the multiplicity of factors involved in determining causes for such reactions.

The relatively low incidence of awareness (1 percent) was not confined to a particular drug sequence or combination; Hutchinson[6] reporting a 1.2 percent incidence of awareness in 656 patients. Similar to our study, her report of mental aberrations was not confined to a single anesthetic combination; adjuvants were halothane (37 percent), $N_2O$-$O_2$-relaxants (37 percent), narcotic (25 percent).

Only one of our patients (0.2 percent) indicated an awareness of tracheal intubation. This low incidence is contrasted with the findings of 1.25 percent of McKenna and Wilton.[7] The latter investigators, however, asked the question, "Do you remember something in your throat?" Such direct questions were not asked in our study and may account for the difference. Other investigators[1,2,5,8] have described a zero incidence of awareness with various anesthetic combinations, which include unsupplemented $N_2O$-$O_2$-relaxant technics and adjuvants of $N_2O$, ketamine, narcotics, and halothane. Perhaps the smaller samples in these studies (60 to 174 patients) were not adequate to demonstrate the true incidence of recall. In the hands of even the best anesthesiologist, inadvertent slips in anesthetic technic may account for the occasional report of recall or awareness.

In the 2 percent of our patients who reported hallucinations, again the incidence was not confined to a particular drug sequence or combination. The literature reveals few references to hallucinations associated with general anesthesia, except with ketamine.[4,5] Some authors[3,6,8,9] have not specifically defined their terms and may have included as dreams what we are calling hallucinations.

Using the definition in this paper, Vaughan and Stephen[5] previously reported a 7.5 percent incidence of hallucinations with a ketamine-$N_2O$-$O_2$-relaxant technic for major surgery. The present study includes only 11 patients with ketamine-$N_2O$-$O_2$-relaxant anesthesia, of whom only one patient experienced a hallucination. This sample is too small to be meaningful.

Garfield's group[9] distinguished between hallucinations and illusions; an illusion was defined as a misinterpretation of a real sensory experience and hallucination as a false sensory perception in the absence of a sensory experience. They reported no hallucinations with ketamine as the sole agent or with a halothane-$N_2O$-$O_2$ combination. All patients, however, who received ketamine experienced some type of illusion, and 67 percent of those receiving halothane-$N_2$-O-$O_2$ also reported illusions. One possible explanation for these findings may be the fact that all patients were warned in some detail preoperatively that they might experience dreams or hallucinations. Using Garfield's definition, 2 of our 12 patients, listed as having had a hallucination, really experienced an illusion; the other 10 were clearly hallucinations.

In the 8 percent of our study population who reported dreams, again the incidence was not confined to a particular drug sequence or combination. To our knowledge, no study to date has looked critically at the incidence of dreams associated with a large series of general anesthetic cases. Hutchinson[6] noted a 3 percent incidence of dreams; however, no correlation with agents and technics was made.

Brice[1] noted a high incidence (44 percent) in 57 patients during an unsupplemented $N_2O$-$O_2$-relaxant technic. Others[2,3,9] have since shown a varying and generally lower incidence of dreams with some modification of this technic. Harris[2] compared the incidence of dreams using an unsupplemented $N_2O$-$O_2$-relaxant technic (57 percent), to the addition of morphine (0.5 mg/7 kg) given as premedication (23 percent), to the administration of 0.3

to 0.5 percent halothane as an adjuvant (0 percent), and to the use of 0.1 to 0.3 percent methoxyflurane as an adjuvant (23 percent). One could infer from these data that the incidence of dreams should be altered favorably by the administration of opiate premedication. However, Harris studied only 30 patients, and again such a small sample has questionable validity. Our study shows that in those patients who received opiate premedication (60 percent), the incidence of dreaming was the same as in the total group.

Garfield[4] noted a zero incidence of dreams when halothane was administered as an adjunct to $N_2O$. Browne and Catton[3] administered Innovar as an adjuvant to $N_2O$-$O_2$-relaxant in 56 patients, failing to note any incidence of dreaming.

We found that dreams did, indeed, occur when halothane and Innovar were used as adjuncts (table 7). In fact, the percentage of patients who dreamed and who received various adjuncts to $N_2O$-$O_2$ (table 3) is almost the same as in the total group studied, supporting our premise that dreams occur in a random fashion without respect to agents or technics, and that when $N_2O$ is supplemented with either potent inhalation agents or intravenous agents, there is no significant difference in the incidence of awareness, dreams, or hallucinations (figure).

One overriding factor that plays a part in this area of interest, and which cannot be answered by our study, is the part that $N_2O$ may play in causing the patient to remember dreams. Certainly this drug, which has become an almost universal adjunct to anesthesia, has historically

(when used by itself) been productive of vivid hallucinations and dreams in some individuals. For the present, the awareness, dreams, and hallucinations associated with general anesthesia appear unrelated to specific agents or technics, to age or sex, or to the surgical procedure.

However, the following conclusions would seem valid:

1. Changing from a balanced to an inhalation anesthetic technic would be unjustified merely to avoid mental aberrations.

2. Sacrificing the advantages of light surgical anesthesia merely to obviate awareness, hallucinations, or dreaming would be a retrogressive step in anesthetic care.

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## Guest Discussion

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I wish to thank Dr Wilson for her facts on mental aberrations associated with general anesthesia. Her thorough and time-consuming conversations with her patients have been most worthwhile. It will come as quite a jolt to some of us pharmacologic bigots to hear that the very real incidence of awareness, dreams, and hallucinations is unrelated to any specific anesthetic agent or technic.

Some specific comments may be appropriate.

*Awareness.* – I doubt that awareness is really a mental aberration; rather it is part of the normal awake state. The seriousness of awareness is often enhanced by preoperative disclosure to our patients that they will feel no pain and will be unaware of what is going on.

To avoid awareness, we must be constantly on the alert for the physical signs of anesthesia becoming too light; they are indistinguishable from the physical signs of fright. Too often, we permit balanced anesthesia to become unbalanced with too much relaxant, too much narcotic, and too little hypnotic. We forget that the hypnotic keeps the patient asleep. Consequently, Dr Wilson, I believe that in your second conclusion, we do not have to sacrifice light anesthesia but merely understand how to use it properly.

*Hallucinations.* – Hallucinations are serious, frightening, and abnormal, and can be caused by anesthetic agents. The vivid accounts of the psychodelic experiences of the scientific and literary great of the 19th century while inhaling anesthetic agents, including $N_2O$, are very startling.[1]

Of interest is Dr Wilson's observation of a low incidence of hallucinations in her small series of patients anesthetized with ketamine, $N_2O$, and muscle relaxant. This matches the experience of others.

Dr Wilson also showed wisdom in extending her inquiries to 72 hours after operations. Another important

source of hallucinogenic activity is drug or alcohol withdrawal, which may occur following anesthesia. The hallucinations of delirium tremens are often unrecognized and not uncommon in the alcohol-dependent patient following operation.

While we may never completely prevent hallucinations in the anesthetized patient, a new era of specific treatment has appeared with the use of physostigmine in the management of hallucinations from belladonna alkaloids.[2]

*Dreams.* – Dreams are normal happenings in normal people, and it is not surprising that they occur under anesthesia. They are rarely a problem and, as Dr Wilson points out, are quite unrelated to any specific factors. I have my dreams, I enjoy my dreams; I hope no one tries to take them away. The best dreams I have had occurred while under general anesthesia.

As Langston Hughes said: *"Hold fast to dreams, for if dreams die, Life is like a broken winged bird that cannot fly."*

Thank you, Dr Wilson, for your painstaking efforts to sift fact from fiction in our understanding of awareness, dreams, and hallucinations with general anesthesia.

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EXCERPT FROM LTC KEELER'S TESTIMONY:

[p. 545] Q. This gas that you described in administering the patients, would that be nitrous oxide?

A. That's one of the gases that's administered by inhalation.

Q. Are you familiar with that particular gas?

[p. 546] A. Yes, I am.

Q. Do you know the effects that may have on a particular individual, postsurgical?

A. Nitrous oxide used to be thought of as a pretty innocuous agent, and they've found a lot of things since then. It's got a simple chemical, $N^2O$; but they found in a lot of ways it isn't so innocuous. In fact, postoperative dreams have been reported after the patient received nitrous oxide.

Q. Have you yourself had occasion to –

A. It's not a very potent inhalation anesthetic; it's the most impotent inhalation anesthesia in the anesthesia armamentarium.

Q. Have you yourself had occasion to review the records of any patients or treat any patients that have had these dreams as a result of nitrous oxide?

A. Yes, I have. Well, I've talked to a couple of patients that had had dreams in conjunction with nitrous oxide, and what surprised me, only nitrous oxide, because again I considered it a relatively impotent drug and I don't expect its effects to be carried on over into the recovery area. But I've talked to two people who have

had dental procedures done, and who have reported to me that after these dental procedures, where they received [p. 547] nitrous oxide, and nothing but nitrous oxide, and their local anesthetic, that they experienced bizarre dreams afterwards.

Q. And the nature of those bizarre dreams, did you have occasion to discuss that with those individuals?

A. Well, actually, yes. I wouldn't normally, but I did elicit that information from one woman where I work at MRIDC, and she had this vivid dream that she was having sex. And I said – I asked her when it happened to see how it was temporally related because again I figured that it would be worn off. But in fact, she reported that it was in the recovery period, and not during and under the influence of nitrous while it was still turned on. Another –

Q. You say she had vivid dreams. Where they of a recurring nature, or –

A. Well, this particular woman, I started asking her questions about other anesthetics. She's had multiple anesthetics, anywhere from dental procedures – I'm talking about general anesthetics – to major abdominal surgery, to even a local anesthetic for a nose job where they just give you IV sedation. And in this particular woman's case, she said she had the same dream every time she got put sleep, when she was awakening and in the [p. 548] recovery room, in that she was having sex. And it was a recurring dream, and I said, well, you know – she said it was very vivid and it surprised her, and every time again –

Q. Was there some way that she had – let me move on to the next drug. The drug Forane –

A. Excuse me?

Q. The drug Forane, isoflurane.

A. Isoflurane.

Q. Okay. Are you familiar with this drug?

A. Yes, however, I have not ever personally delivered this drug as an anesthetic. It's come out on the market since I stopped practicing clinical anesthesia.

Q. From a pharmacological standpoint, are you aware of the effects that it may have on a particula individual?

A. It is an inhalation anesthetic; and as such, it is related to inhalation anesthetics that I have delivered. And the way all these work, and the reason that they put people and keep people to sleep is that they go to the brain. And that's how it works, by putting the brain to sleep. It affects different parts of the brain differently; it affects the cardiovascular system in a certain way. It's related in chemical structure to other inhalation agents. There's nothing that makes it [p. 549] any more special than another potent inhalation agent. There are three potent inhalation agents that we use today in this country, and the impotent nitrous oxide. But there are fine differences between then, when you would use one and when you would use another. But they all do the same job as far as putting someone to sleep.

* * *

[p. 594] REDIRECT EXAMINATION

Questions by Civilian Defense Counsel:

Q. Just one or two questions, Doctor. You reviewed the records, marked Prosecution Exhibit Number 1, and I'd ask you to turn to those records now and see if you find the drug or inhalation agent nitrous oxide.

A. Yeah, I know – I've seen it; it's in here.

Q. Do you know that it was administered to Marybeth Marks on the 12th of May, according to those records?

A. Yes, it was.

Q. And are you personally aware of patients who have, just that drug alone, have had dreams, or hallucinations, or aberrations?

A. Yes.

Q. And are those the experiences that you've related earlier to this court?

A. I only related one of them.

Q. And the second one?

A. Was a young man again for a dental procedure; he received nitrous oxide. He was a little squeamish about the needle, so he went under 50 percent nitrous oxide prior to them putting in a nerve block for the actual anesthesia or analgesia procedure. And he had some very – a very real sensation of being stroked along the [p. 595] inner aspect of his thigh by the technician who was administering – the dental technician, female, who was administering the nitrous oxide. He told me that it was a

crazy experience and he doesn't want to go through it again because of this feeling of not being in control. I mean, he thought she was coming on to him. Now, this happened actually during the case, but he was getting only 50 percent concentration of nitrous oxide, so you are not really totally out.

Q. And that was – and he received no other drug other than the nitrous oxide?

A. He received no other drug other than nitrous oxide. He knows it can't be true because of the fact that the dentist was monitoring.

* * *